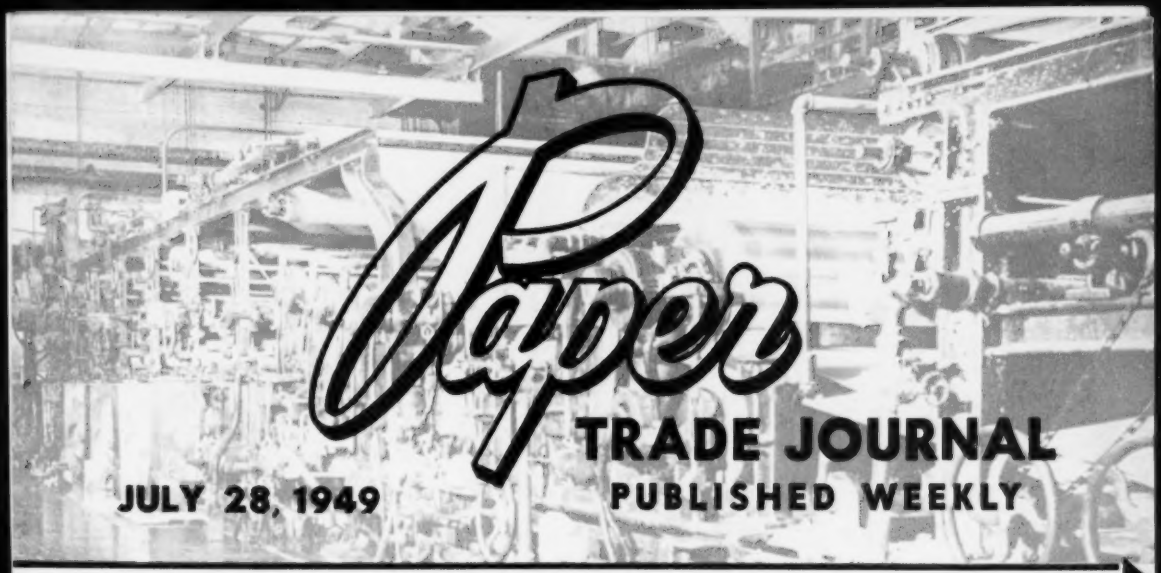

WOOD PULP

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Established 1886

"Put your creed into your deed."
EMERSON

The endeavor to make promise and performance synonymous has been a guiding principle of this house throughout its sixty-four year span.

The goodwill and friendship of three generations of American papermakers has always been and will continue to be our most treasured possession.

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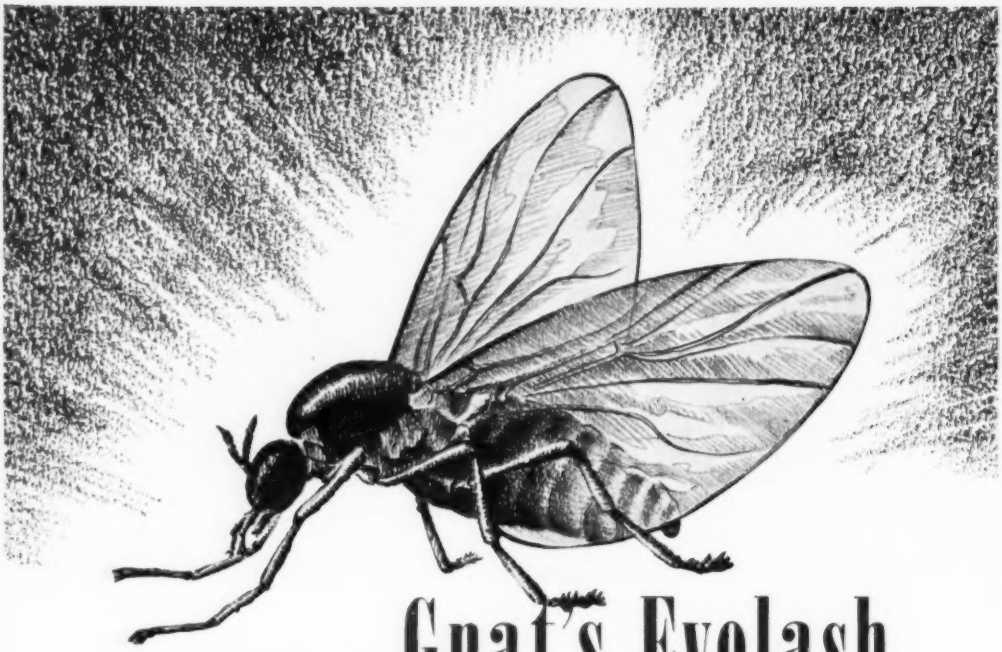

WITHIN A Gnat's Eyelash

We haven't the faintest idea as to the diameter of a gnat's eyelash (and care less), but we do know that the new Downingtown Duplex Cutter and Slitter gives accuracy of sheet length to within .0625 which everyone knows is cutting to "within a gnat's eyelash." You're assured of this kind of accuracy and positive squareness of the sheet with the completely re-designed, modern Downingtown Duplex Cutter and Slitter, because of its POSITIVE DRIVE ADJUSTMENT. Unique features, not found in any other machines of this type, assure (1) greatly reduced secondary trimming (2) absolutely minimum wastage (3) continuous high speed operation (all bearings are oversize, anti-friction type), (4) ease of passing sheet and (5) ease and simplicity of slitter adjustment or removal, while running.

This new Downingtown Duplex Cutter and Slitter "must be good," because it hasn't been on the market very long and already eight have been sold, which includes a repeat order from one customer. What more need we say, other than to remind you that, if you want to reduce your cutting and slitting spoilage and maintenance to "within a gnat's eyelash," fill in and mail the coupon today.

BLUEPRINT FREE—NO OBLIGATION

Downingtown Mfg. Co.
Downingtown 1, Pa.
Please send me a blueprint of your new Duplex Cutter and Slitter, and a summary of its many unique features.

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Address _____

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DOWNINGTOWN, PA.

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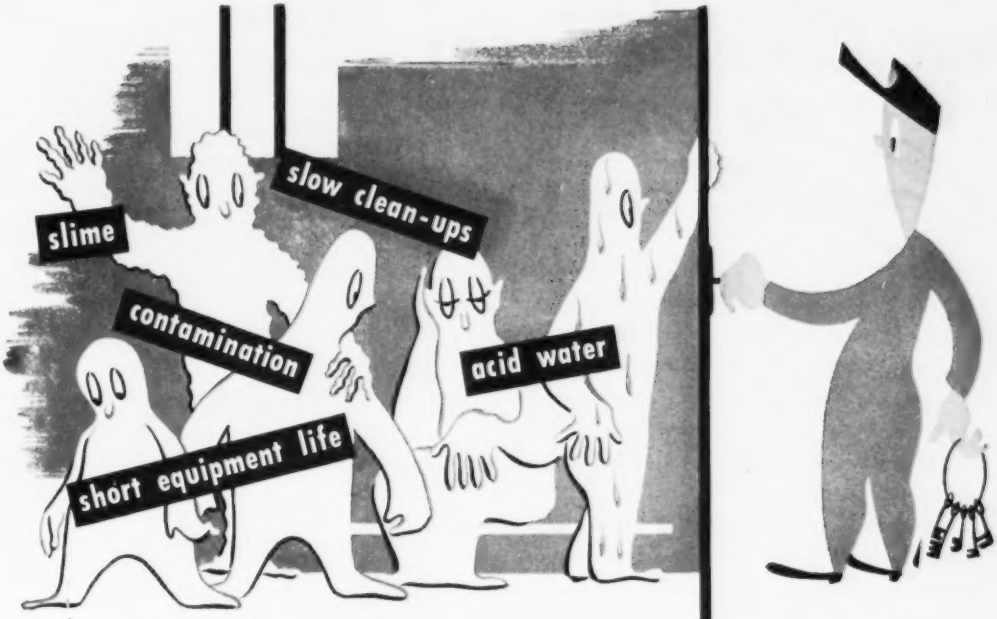

Put corrosion troubles behind Stainless bars

Corrosion is a constant threat to the life of your equipment and the quality of your paper. But with Armco Stainless Steel bars and wire in this important equipment, you can keep this trouble-maker under control, cut costs and improve your products.

Take sulfite thickeners, for example. Here you can't afford to gamble with pulp contamination and take a chance on down-grading your production. That's why Armco Stainless Steel Type 316 is an ideal choice for this highly corrosive operation. It combines exceptional corrosion resistance with great strength and ease of cleaning.

The check list on this page tells you where Armco Stainless bars and wire are being used to increase service life, reduce slime accumulation, and eliminate pulp and paper contamination. Changing over to stainless in *your* equipment could well give you these same advantages.

Armco also produces stainless steel sheets, strip and plates widely used in paper mill machinery. Especially noteworthy are the Extra-Low-Carbon grades which eliminate dangerous carbide-precipitation due to the effects of welding. Ask your fabricator about Armco Stainless, or write us direct. Armco Steel Corporation, 3499 Curtis Street, Middletown, Ohio. Export: The Armco International Corp.

Armco Stainless bars increase service life in this equipment:

- Beater Bars
- Cylinder Machines
- Doctor Blades
- Filter Screen Fastening Strip
- Paper Coating Filters
- Jordan Bars
- Paper Machine Knives
- Pump Parts
- Paper Tube Mandrels
- Valve Parts

ARMCO STEEL CORPORATION

THE *Complete* STORY ON THE *Complete* REX LINE

Here's the complete story on the complete Rex line of pulp and paper mill chains. Bulletin No. 48-27 gives you all the facts . . . specifications, dimensions, list prices plus important data on Rex quality features. There's page after page of application photographs . . . interesting views of Rex Chains at work in mills from coast to coast.

It's a book that belongs on your desk . . . an easy reference to simplify your selection and specifications. For your copy, see your local Rex Field Office or write direct to Chain Belt Company, 1605 West Bruce Street, Milwaukee 4, Wis.

CHAIN BELT COMPANY REX DRIVE AND CONVEYOR CHAINS

PUBLISHED

EVERY THURSDAY

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MEMBER

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Paper TRADE JOURNAL

VOL. 129 **NO. 4**

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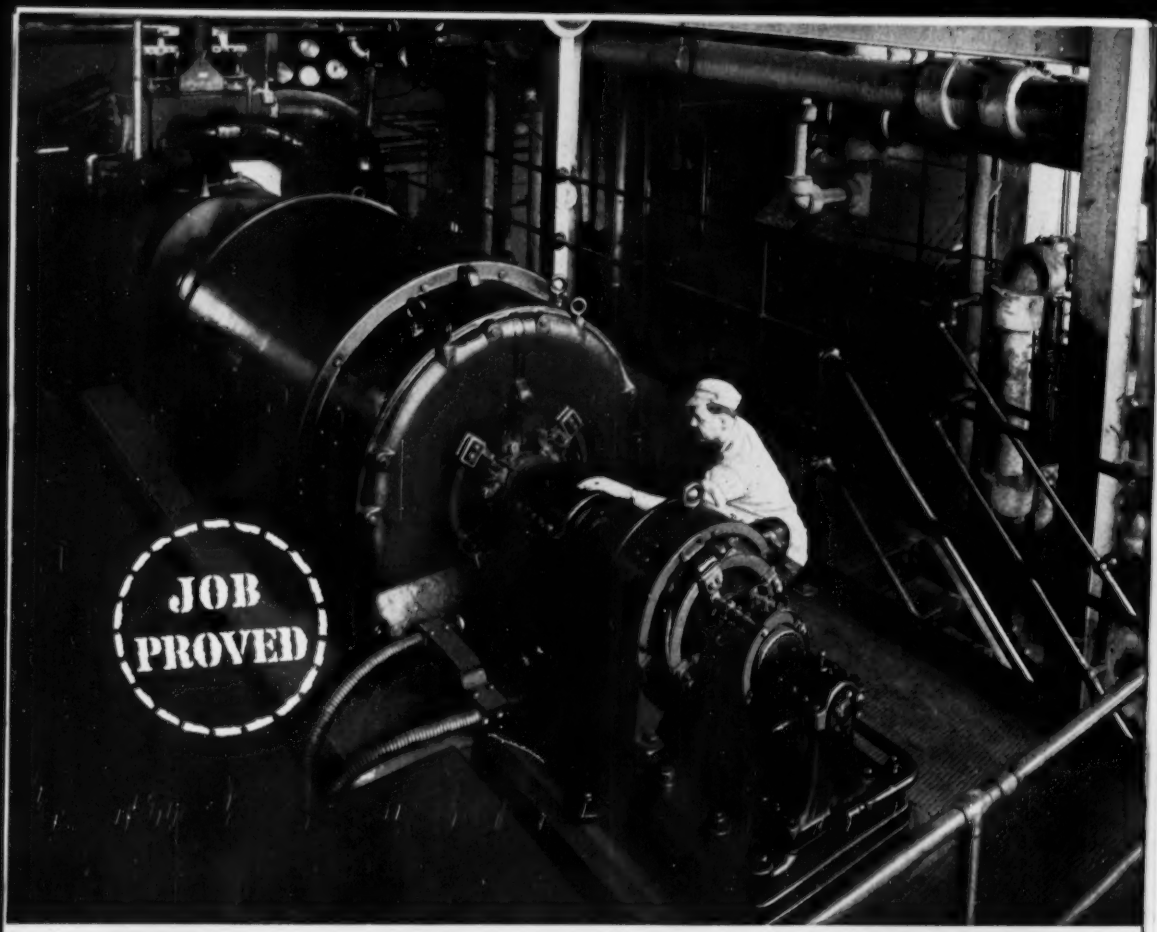

PROTECTED BY SUNVIS 916

Turbine Bearings and Journals Corrosion-Free Despite Summer Shutdowns — Oils Like New After 9,000 Hours

Three years ago, a paper mill overhauled a steam turbine. Thereafter, it was planned to operate this equipment on a 'round-the-clock schedule during the six winter months, and completely shut down in the summer. On the advice of a Sun Engineer, the mill charged the circulating system supplying turbine, generator journals, and governor with Sunvis 916. This oil was chosen because of its "Job Proved" ability to prevent rust and corrosion and to give troublefree lubrication for a long period of time.

The management's selection of Sunvis 916 proved to be sound. After 9,000 hours, a laboratory analysis of the oil showed it to be unchanged—comparable to a sample of new oil. Even more important, inspection showed no abnormal wear and no corrosion in bearings and journals, despite the summer-long shutdown.

The turbine has now operated 12,000 hours without oil-change, and it appears that none will be necessary in the foreseeable future.

All oils in the Sunvis 900 series have a high viscosity index, are fortified against oxidation and sludging, and prevent rust and corrosion. Sunvis 900 Oils are the finest lubricants available for turbines, hydraulic systems, and similar applications. For a free, illustrated booklet on Sunvis 900 Oils, write Department PT-7.

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"JOB PROVED" IN EVERY INDUSTRY

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 27, 1949.

Business Confidence Revives

A slight but unmistakable air of general business pickup has begun to sprout since the Administration's counselors urged abandonment of anti-inflation legislation. Reports from all sections of industry show business confidence reviving, with most significant improvement noted in New England, known as "pace-setter" for the nation.

Retail sales are reported by D&B to be sustaining dollar volume supported by aggressive promotions and favorable weather, as shoppers continue to seek quality goods in lower price ranges. Increased purchases of furniture and household goods also are noted, with interest in durables rising moderately.

Total dollar volume in wholesale trade for the week ended July 22 increased from the preceding week, though still moderately below the high level of 1948's week.

D&B also notes a slight increase in total industrial production for the week, with steel ingot production 1 percent ahead of the previous week, the second consecutive week in which output advanced.

New York Reports

New York market reports point up a steady rise in sales in the cotton goods market, with print cloth sales highest for the year. Apparel houses are preparing for a good Fall.

New England Recovering

Woolen and worsted, rayon and shoe producers in New England state that business is picking up, and brighter prospects are reported by makers of non-durables and durables.

Midwest Paper Mills Hopeful

Wisconsin's paper mills sound an optimistic note according to reports from that area. The men who run the mills say there have been no cutbacks in employment in the Green Bay area and no overall production decline. Where some lines have slipped, others have gained to take up the slack, they state. Vigorous sales promotion efforts are reported to be paying off. Paper mill executives were unanimous that business has not been too adversely affected.

Canada's Newsprint Market

OTTAWA—An analysis of the current exchange difficulties, which are gradually indicating their effects on the prospects of Canada's newsprint shipments to other countries around the world, shows that some of the best customers for such Canadian products are carrying out serious efforts to produce their own newsprint. In the long-run, such domestic efforts may bring a lasting loss of these markets for Canadian newsprint. At least, such forecasts are heard in unofficial circles now resulting from developments lately.

It is true that Canadian newsprint shipments across the border to the U. S. so far in the first five months of 1949 have increased to a total of 1,776,110 tons, as compared with 1,662,327 tons a year ago in the corresponding period. Likewise there have been gains in shipments to other sources, including in January-to-May period this year some 42,703 tons to Central American and Caribbean, against 38,999 tons last year; 39,258 tons to British Isles against 35,573 a year ago; 5,476 tons to other European and Balkan countries against 109 tons; 35,820 tons to Africa against 24,152 tons; 9,300 tons to India and Middle East against 8,300 tons, and 19,932 tons to Australasia against 17,292. In other words, total shipments in the first five months of this year advanced to 1,985,951 tons as compared with only 1,853,733 tons a year ago in the similar period.

However, it is observed that there were also decreases in newsprint shipments to some regions of the globe during this period so far in 1949, including 22,798 tons to South America, compared with 42,902 tons a year ago; 1,924 tons to Mediterranean and Near East as against 3,212 tons last year, 12,577 tons to the Orient compared with 20,800 tons a year ago, and 53 tons to others compared with 67 tons last year.

In addition to these downward trends already in evidence in the first five months of 1949—all important losses under current conditions in the trade—newsprint shipments which have been rising so far this year in some markets are almost certain to decline in the near future because of hints that exchange difficulties are getting worse instead of better in these countries, so that Canadian exports to these areas are questionable. Not only will these markets contract but some may even disappear, perhaps temporarily, for Canadian products unless the overall dollar situation changes for the better. At the moment, the outlook of an early solution for the exchange problem does not look bright, observers here whisper. This, of course, may affect the newsprint exports in time.

Then again, reports reaching here suggest that certain countries around the world are really going to give the "green light" to domestic efforts to produce their own newsprint, with this bound to affect adversely in time the Canadian newsprint shipments to such areas. It is known that some South American countries are determined to produce their own newsprint. While only Brazil and Argentina are mentioned so far as preparing to create such newsprint undertakings within their borders on a worthwhile scale, yet it is understood here that other countries are also looking into the possibilities of starting newsprint industries. It is also known that New Zealand is interested in developing its resources along such lines, especially interesting being the reports of efforts in that country to assure a continuous supply of pulpwood. India has definitely entered into the newsprint field by operations aimed to bring such production into worthwhile existence as soon as possible, with the newly gained independence of that country being linked with efforts to increase on a widespread scale the literate qualities of the vast masses, which means much more newsprint usage.

Up to the present time, the demand for Canadian newsprint has been great from various quarters around the globe and there is no doubt that sales will continue as far as the immediate future is concerned. In the long-run the situation may change for such Canadian newsprint exports, judging from the gradual developments in certain desirable overseas markets. Observers already see the handwriting on the wall as a sound warning that so-called temporary losses of some newsprint markets may turn out to be lasting losses for such Canadian trade, particularly where domestic newsprint industries are being now started.

Vacation Week Indexes

Ratio of production of unbleached kraft paper to potential mill capacity for that product was 62.9 percent for the week ended July 16, compared with 40.7 for the preceding week, and with 91.5 for the corresponding week of last year.

Comparative ratios of U.S. paper and paperboard production to mill capacity, as reported by AP&PA are:

	July 16 1949	July 9 1949	July 17 1948	July 19 1947	July 20 1946
Paper	76.6	†44.7	87.1	102.8	102.8
Paperboard ...	64.0	35.0	84.0	97.0	94.0

† Revised.

Paperboard Production (Tons)

	July 16 1949	July 9 1949	July 17 1948
Production	137,034	73,941	157,641
New Orders	145,799	104,809	138,409
Unfilled Orders ...	282,174	278,124	372,739

Percent of Activity, Current, 64%; Year, 78%.

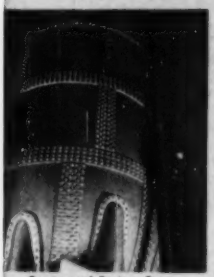
General Business Index

Index of general business activity for the week ended July 16 inclined to 145.5 from 130.0 in the preceding week, compared with 152.5 in the corresponding week of 1948. Index of paperboard production rose to 151.2 from 91.0 in the preceding week, compared with 172.2 in the corresponding week of 1948.

When *Quality*
NOPCO PAPER CHEMICALS

. . . for Nopco Paper Chemicals are specifically designed to meet the varied needs of pulp and paper manufacture—to help produce paper that promotes customer satisfaction, repeat business, word-of-mouth recommendation, increased sales.

Nopco Paper Chemicals eliminate many operating difficulties, cut costs, save time, improve the finished sheet. In addition to items listed here, they include soaps, synthetic resin emulsions, plasticizers and lubricants for use in all phases of manufacture—whether paper, paper board, insulating board, pulping and rag cooking, tissue, or converting. Full information is yours for the asking. Write us today.

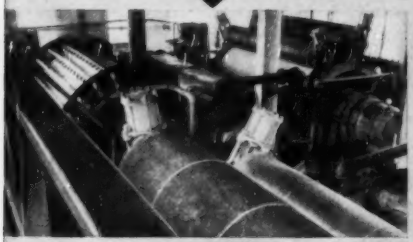


Courtesy of Eastern Corp., Bangor, Me.

DIGESTER

NOPCO Nopalcol*
An additive that helps to reduce cooking time of sulphite pulp.

Pitch Control is initiated here by the addition of a solvent. This solvent aids in keeping liberated pitch in solution so it may be effectively handled later in the system.



WASHERS

Pitch Control

NOPCO 1216-V Used in the Washer, Nopco 1216-V emulsifies the solvent and the pitch in the solvent to reduce the liberated pitch content of sulphite pulp.

Foam Control

NOPCO KF (for Sulphite) With its unique ability to destroy foam, Nopco KF increases the operating efficiency of pulp screening and pulp refining equipment.

NOPCO 1333-B (for Kraft) Here is a highly concentrated product that eliminates foam and promotes efficiency in the production of sulphate pulp.

OTHER EFFICIENT NOPCO DEFOAMERS for use in pulping and bleaching operations are: NOPCO KFN, NOPCO KFS, NOPCO 1519, NOPCO Vegifat Y.

BEATER

Sizing

NOPCO 2251-X, NOPCO 2251-B These anhydrous wax size bases are prepared for easy handling in the mill. Nopco 2251-X requires the addition of water only; Nopco 2251-B, the addition of wax and water. Both yield emulsions stable from infinite dilutions up to 70% solids.

NOPCO 2252 — Paraffin Wax Size An efficient sizing agent, giving a consistently uniform size unaffected by water conditions, pumping action or operating temperature. Equally effective in all types of furnishes. Stable in any dilution. Ideal for mills with small requirements or limited mixing facilities.

NOPCO 2146-R A high free rosin size emulsion, particularly valuable in hard water areas.

NOPCO Size I An efficient waterproofing agent for asbestos paper—and photographic printing papers, where chemical stability of sizing agent is essential.

Softening

NOPCO Softener #73 Specifically formulated for use in manufacture of high grade tissue and towelling. Stabilizes the absorbency of the finished sheet and gives unusual softness. The affinity which this cationic softener has for the fibers, permits its addition at the beater or at any convenient point in the stock preparation cycle.

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EVOLVED THRU RESEARCH

NOPCO CHEMICAL

Formerly National Oil Products

does the talking

turn Prospects into Buyers

"WET" END OF PAPER MACHINE

Sheet Formation

NOPCO KF Improves sheet formation, even at increased machine speeds, by eliminating foam and faulty fiber dispersion; dissipates entrained air. Outstanding advantages: at least 75% reduction of thin spots, reduced breaks; improved surface characteristics.

Clean Up

NOPCO 1216-V This emulsifier, when used with a solvent, removes asphalt and pitch deposits from metallic surfaces. An excellent medium for cleaning screens, wire and suction rolls.

Courtesy of Whippany Paperboard Co., Whippany, N. J.

PRESSES

Felt Washing

NOPCO Syntergent*K A felt washing compound that may be used on or off the machine. Mixes readily with warm or cold water; gives a rich, persistent lather. Dispersible and stable in dilute acid or alkaline mediums. Rinses out freely when washing is complete; leaves felt soft and well napped.

Courtesy of Black-Clawson Co., Hamilton, Ohio

DRYER SECTION

Machine Coating

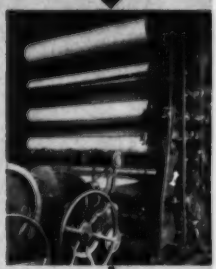
NOPCO ESI Improves flow characteristics as well as brightness and gloss. May be used in casein or starch coatings.

NOPCO 1400-B (Ammonium Stearate) Functions as a plasticizer, and aids in controlling dusting on the calender rolls.

MACHINE CALENDER STACK

NOPCO 2252 — Paraffin Wax Size Besides being used in the Beater, Nopco 2252 may be used as top or surface size in the Size Press or Calender Water Box. Often employed with starch, glue or casein emulsions. Improves printing qualities and increases scuff resistance of paper board.

NOPCO ESI Used in conjunction with starch to improve gloss ink printing on folding box board.



CONVENTIONAL COATING

NOPCO 1400-B (Ammonium Stearate) Added to coating color formulations, Nopco 1400-B plasticizes the coating; helps to minimize dusting during supercalendering.

NOPCO 1600-B May be used advantageously for all general defoaming and evening requirements. Minimizes fish eyes and similar defects. Works well with colored coatings...

NOPCO Sulfonated Oils and Fats Incorporated into the coating mix, these materials impart plasticity, reduce foam, promote evenness of application.

NOPCO ESI Flow, brushing characteristics, brightness and gloss of casein and starch coatings are all improved by addition of Nopco ESI. Dusting troubles usually developing on the Super Calender are substantially reduced when Nopco ESI is added to coating color formulations.

NOPCO 1810-L — Wax Emulsion An acid stable wax size used to impart plasticity to coating color mixes.

*Reg. U. S. Pat. Off.

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Paper TRADE JOURNAL

News of the Week

MILLS

Forest Service Gives Facts

To Ask Bids on Colo. Timber

DENVER, Colo.—U. S. Forest Service announcement indicates that bids will soon be invited on enormous timber tracts in the central portion of Colorado's western slope. Although these areas would be set aside for all time to come to supply a proposed pulp and newsprint industry, ample timber resources would remain for other purposes, the Service states.

Hoping to get the forest contract, the Columbine Development Co.—made up entirely of residents of the region, according to its president, Preston Walker—has entered into a provisional contract with the engineering firm of L. Morris Mitchell, Inc., of New York City, who have been associated with the erection of many pulp and paper mills in the U. S. in recent years, Mr. Walker said.

In Denver, Rocky Mountain Regional Forester John W. Spencer of the U. S. Forest Service, said that the forest service has been attempting to interest an industry such as the pulp and paper industry in the huge stand of beetle killed timber in forests of western Colorado for many years. Only in recent months have concrete proposals been made. Exact details of the proposed pulp and newsprint mills which involve a 15 to 20 million dollar investment have not been worked out. Mr. Spencer said the industry would be located somewhere on the 40-mile stretch of the Colorado River between Glenwood Springs and Rifle. It is learned that other sites farther down the river are also available, that one of the best sites is probably east of New Castle, still unsold.

Interest Revives in Potentials

"Immediate impetus for the current revival of interest in Colorado's pulp wood potentials," explained the regional forester, "has been the increasing amount of beetle kill Engelmann spruce on these five national forests. Our survey shows something close to four billion board feet killed in this epidemic since its discovery about 10 years ago and every board foot of it is definitely salvageable."

The epidemic, greatest known in the entomological annals, stemmed from the June 15, 1939, tornado which flattened whole sections of Engelmann spruce stands on the western slope. Taking advantage of these down and sound but living trees, a native insect, the Engelmann spruce bark beetle, attacked fallen stems and bred into vast populations.

Since the killed trees stayed green for two years, work of the beetle was hard to discover. By 1942 its increase was tremendous and two years later, it was estimated that 90% of the trees 10 inches and above in diameter, were dead in one large area alone on the White river national forest. By now all the Englemann spruce north of the Colorado river on this forest, about 3½ billion board feet, are dead.

In addition, by 1948 survey, 35 to 50 million are dead on the Grand Mesa national forest where the epidemic was first discovered, 74 million on the Routt, five million on the Uncompahgre, 29½ million on the Arapaho and lesser amounts on the Gunnison and San Juan forests. Entomologists came into the epidemic picture in 1942. Methods of control they recommended required men by the thousands but with the war on, manpower was at a premium, foresters were helpless. Government salvage measures in 1944-45 were planned but proved impractical as the short logging season permitted too little use of scarce and vital logging equipment.

Efforts were then directed, Spencer pointed out, to using this dead timber for pulp wood as it was fast becoming unuseable for normal timber requirements. "Some was sold in 1947 as pulpwood and shipped to the lake states. Twenty years before this we had a deal involving several million board feet of then living Engelmann spruce for a pulpwood industry out here but mainly because of the depression, soon after, the deal fell through.

Local Plant A Necessity

Investigations so far carried out to develop the pulpwood market according to A. L. Nelson, regional chief of the services timber division, indicate the necessity of a local plant to process the large volume of dead wood if it is to be used in any quantity. Unfavorable freight rates to eastern mills dictated this necessity. It was determined from recent studies in Utah where the same bark beetle had killed stands of spruce timber 25 years ago, that the wood remained sound for this time and about 80% of the trees were still standing.

"These facts made it possible to consider the beetle kill timber as a raw material supply for the use of a paper products plant on the western slope," said Nelson, "since any plant would need this supply of dead timber along with other standing timber to continue to manufacture pulp indefinitely.

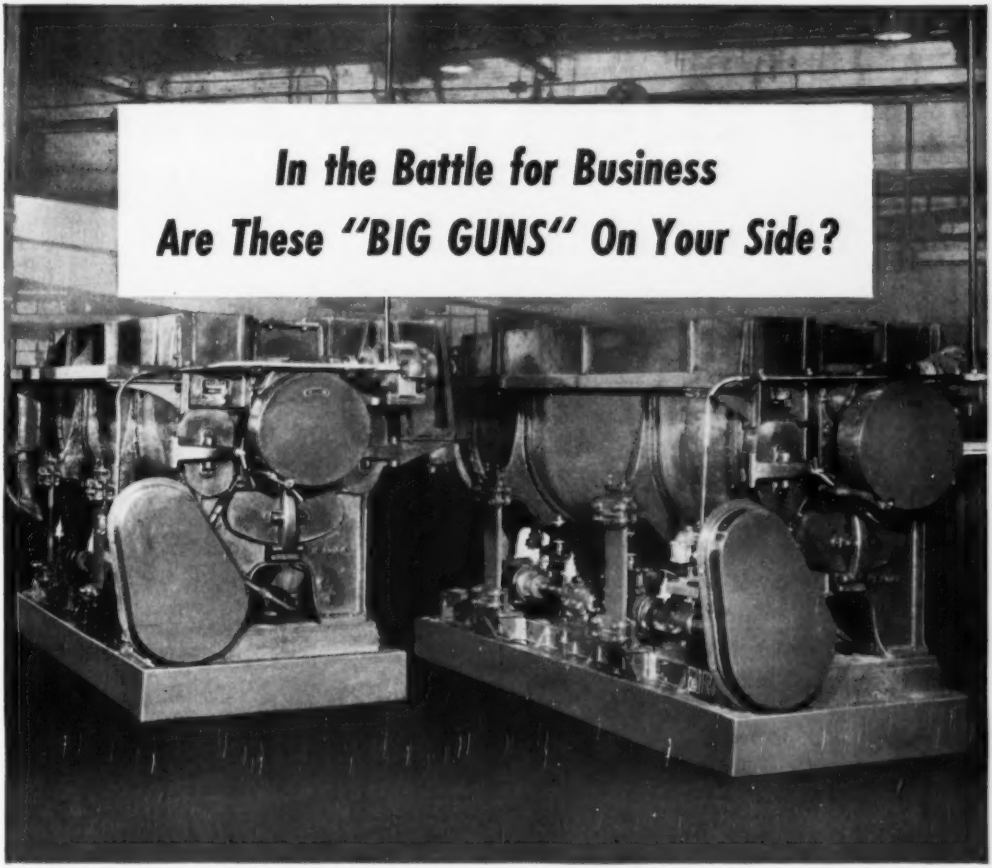
"On the White river national forest, it is roughly estimated that something over three billion board feet of dead Engelmann spruce, approximately six million cords, a little more than half is in an operable stand. This means that at least three million cords of dead wood could be considered as available for use by a plant if harvested within the next 20 to 25 years. In addition to the dead Engelmann timber, there is available about 2,700,000 cords of green timber of that and all other species.

"The green timber needed to operate a paper and pulp mill in addition to the dead wood, would have to come from these 2,700,000 cords that the rather broad estimates of the forest service indicate may be available in the stands not yet killed by the bark beetle. It must be remembered that only part of this green timber would be cut since only the mature and the over mature trees or those that should be removed because of disease or for other reasons, would be marked for cutting. From this live and dead timber above mentioned, would come the largest part of the needs for a pulp mill during its first 30 years. Small quantities would also come from the Grand Mesa, Uncompahgre, Gunnison and Routt forests.

Forest Service Policies

"Forest service policies dictated that any wood-using industry supported by national forest timber, should not exceed in size that which could be supported by the timber available on a permanent basis. So-called 'sustained yield' out of the timber supply is important, therefore, in deciding whether or not a certain kind and size of wood using indistary could be supported. The important question in the present instance is then, do the national forests within an economical shipping distance of a proposed pulp mill, support enough timber and timber growth to supply such mill with green timber after the dead timber is no longer usable." The forest service believes they do.

"Such forests as the Routt, Gunni-



DROP-OFFS ARE DONE AWAY WITH at the wet end of board machines when Bird Screens like these go on the job. With today's high speed operation drop-offs are too costly to tolerate. That's one reason why board mills all over the continent are putting in Bird Screens.

Big, modern Bird Screens are potent protection against loss of business due to lack of quality. With paper buyers casting critical eyes on the cleanness and uniformity of every sheet, this is no time to limp along with outworn or inadequate screening equipment.

Take a look at *your* Screens, now. If you have any doubt about their ability to do today's job efficiently and economically, get in touch with us at once.

BIRD MACHINE COMPANY, SOUTH WALPOLE, MASSACHUSETTS

90% OF ALL THE PAPER MACHINES IN NORTH AMERICA ARE EQUIPPED WITH BIRD SCREENS

son, Grand Mesa, Uncompangre would have to come into the picture to supply timber during the 30th and 90th year of mill existence, Nelson explained. To assure the permanency of a paper and pulp industry, it would be necessary to allocate certain parts of these national forests to supply pulpwood. The minimum annual requirements for the support of an economic sized plant indicates that about 380 cords a day, or, approximately 115,000 cords of wood, would be needed for each of the 300 working days a year."

"Our calculations," Nelson continued, "indicated that the timber supply on the western slope could support this size plant with a small percentage of this wood supply coming from private lands and possibly some private lands in Utah. It appears entirely practicable to furnish at least 100,000 cords annually from areas mentioned and still have about 70,000 cords, or 35 million board feet, left over and available for local needs."

Permanent Industry Proposed

The proposed project involving a 30 year sale and perpetual commitment of timber to maintain the industry on a permanent basis definitely would tie up most present production of the White river national forest and part of the four other forests mentioned. If the plant is found to be practical, it will mean that there will be an increase in present employment of somewhere around 1,000 man years work. This includes the additional man time which would be required to carry on both mill and wood operations for a plant the size contemplated.

It was pointed out that other permanent benefits would result from the establishment of such a mill; for example there would be an increase in and more stabilized payments made to the counties embraced by the national forests involved, of the 25% of the national forest receipts such as required by law in lieu of taxes. Also wherever the plant may be located on the western slope, the local community would benefit by the continued stability of a large permanent pay roll. This in addition would be noted throughout the area as there would be a permanent demand for wood labor. The tremendous advantage of having a national forest area upon which intensive scientific forestry could be practiced, is of vital interest.

The feasibility of a plant involves many other factors than the timber supply. Nelson concluded these would have to be considered by any company or group of men, before they would be able to undertake a development of a paper and pulp mill on the western slope. For example, availability and adequate supply of water would be one very important factor for the industrial engineer to consider. Then a problem of providing for the elimination of any stream pollution would be another factor to be solved. The solving of these points will be very important in deciding the sale of national forest timber.

Woods-Dryden Expanding

OTTAWA—Woods Mfg. Co., Ltd., annual report shows that during 1948 the manufacture of paper bags, other than multiwall bags, previously carried on at Winnipeg was merged with the manufacture of similar types of bags made by the Dryden Paper Co. Combined operations are being carried on by a new company, Woods-Dryden Paper Bags Ltd., at Winnipeg, 60 percent interest of which is held by Woods Manufacturing Co. Ltd. The new company manufactures grocery bags, notion and millinery bags, shopping bags, duplex and triplex bags.

During 1948 a new plant at St. Lambert, Que., was brought into production for the manufacture of jute and cotton bags and multiwall paper bags, with the installation of the final equipment for multiwall paper sacks bringing expenditures on this new plant to completion. Capital expenditures of $735,944 during 1948 included continued modernization of the Welland mill and expenditures on the new St. Lambert plant. Further expenditures are anticipated in 1949, principally at the Welland plant where the program is expected to extend over the next few years, according to the annual report.

Reduced demand resulted from the swing from jute and cotton to paper bags, the report discloses, adding that the provision of multiwall paper containers, which has come into full operation in mid-1949, is designed to protect the company from this situation.

Austell Boxboard Gets Underway

AUSTELL, Ga. — The Austell Box Board Corp. huge $1,000,000 plant, occupying a 58-acre site within the city limits, and with potential daily goal of 150,000 pounds of paper box board daily, has begun operations according to the management.

Officers of the new corporation, a subsidiary of the Carolina Paper Board Co. of Charlotte, N.C., are Ross Puette, of Charlotte, president; G. Scott Francis, of Austell, vice-president; and James Dalton, secretary-treasurer.

Messrs. Puette and Francis, veteran boxboard men, say the local plant expects to employ about 75 men, creating an anticipated payroll of around $3,500 weekly. "I hope that figure will rise considerably as the plant's products become better known in this section, and the need for more men arises," Mr. Puette stated.

Mr. Francis explained that waste paper will be reclaimed and reduced to pulp, without the aid of corrosive-smelling acids, and a finished paperboard product will be discharged through a process which involves heating, rolling, drying and tremendous pressure from gigantic rollers. "No boxes, paper, wooden, nor cardboard, will be made at the Austell plant," he emphasized. "Instead box manufacturers will order large sheets of the paperboard and will assemble hat, shirt, shoes and clothing boxes at their own plants, the paper running from 54 thousandths to 18 thousandths of an inch thick.

"Our employes will work a 40-hour week, running in shifts, and as more men are added preference will be given to local people," Mr. Francis added.

Key machine at the Austell plant is a huge cylinder board paper shredding device. Officials said difficulties in installation delayed the factory's official opening from early June until now.

Western's New Plant Started

LOS ANGELES—Western Waxed Paper Co., a division of Crown Zellerbach Corp., has made financial arrangements with the Mutual Life Insurance Co. of N. Y., for construction of a factory and office building at Sheila St. and Leo Ave., in the Bandini district.

Western sold a 9-acre site and then leased it back. Work on its new plant has begun. The new buildings, with 200,000 square feet of floor space, will be sold to the insurance company and leased back for a long term.

When the plant is completed, Western will move its Los Angeles operations from its present quarters at 910 E. 61st St., where 270 persons are employed.

Dexter Sues Frontenac

WATERTOWN, N. Y.—The Frontenac Paper Corp., of Dexter, headed by L. Lesavoie of New York City, has been made defendant in a mortgage foreclosure action brought by the Dexter Sulphite, Pup & Paper Co., Inc. Action is to recover on a mortgage executed last Dec. 1 against the Frontenac plant and real estate to secure a promissory note in the amount of $77,104.43.

The Frontenac plant which has been idle for several weeks previously had a payroll of 60 persons and produced 20 tons of variety grades of paper daily.

Other claimants against the Frontenac Corp. are brought in by the Dexter Sulphite Co. as parties defendant in order that its mortgage claim can in no way be legally impaired.

Because of the delinquent 1948 Dexter village tax of $4,649.82, mill and real property of the company were sold at tax sale by the village to Hayward C. Arthur, local realtor, last year. A tax deed has not yet been delivered to him.

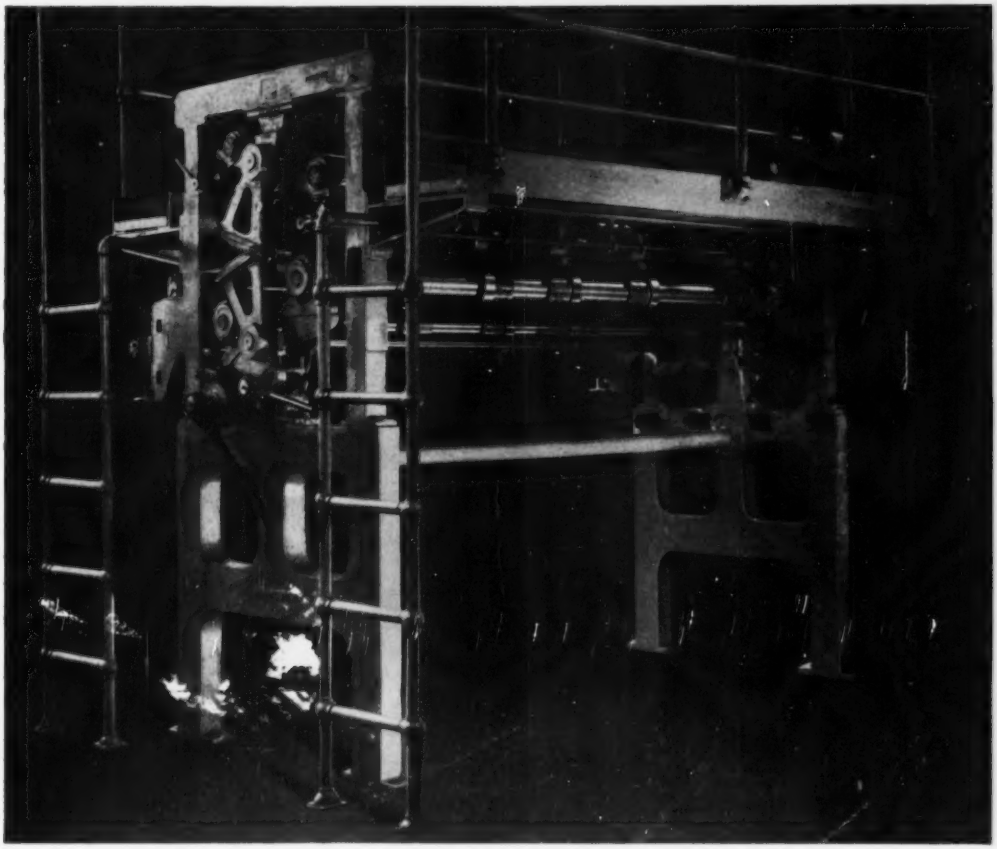
Receiver Appointed

CINCINNATI—Attorney Timothy S. Hogan has been appointed receiver for the Granville Paper Co., Madison, and which has a plant in Newark, O., by U. S. District Judge John H. Druffel. His bond was fixed at $10,000. The appointment resulted from filing of an application for receiver for the company by the Ohio Knife Co., B. & O. Railroad and Dreman Street, an alleged creditor of the paper company.

It was explained that this action is taken to conserve the assets of the Granville Co., reported valued at $30,000 in real estate and $500,000 in personal and property assets.

it's new–it's versatile–it's more efficient

Moore & White DUPLEX SLITTER



This slitter is built of box section frames, for hard continuous operation, and will efficiently handle 95 percent of the grades of paper and paperboard manufactured today. The unit can be operated with practically any type of sheeting equipment where fast change-over from one sheet-width to another is required. It eliminates shutdown time when changing sheet-width and also reduces waste due to resetting of slitters.

This unit, when combined with our new rotary sheet-cutters, permits continuous sheet operation. Changes of width and length of sizes are made without shutting down the combined units. The change-over from one slitter section to the other is fast, simple, and accurate.

Positive throwout of top slitter blades is accomplished through the use of a handle on each slitter section. One quarter-turn of the handle moves all blades in the section either in or out of normal operating position.

The slitter may be driven separately, from the sheet cutter, or direct from the paper machine line shaft. Each section is driven as a separate unit, complete with clutch to eliminate shock loads when change-over is made. All moving parts are encased in antifriction bearings.

The speed range of the new Moore & White Duplex Slitter will meet the needs of any sheeting equipment now in operation. It is built to standard widths of 50, 62, 72, 84, 110, and 124 inches. Additional widths are available in sizes to suit your requirements. Write today for complete information.

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE • PHILADELPHIA 32, PA.

VERN MAHONEY

—named general sales mgr. of Dixie Cup Company, Ltd. (Canada). Mr. Mahoney has already assumed his new duties at the recently completed Dixie Cup plant at Brampton. The company also announces the appointment of Mr. Harold E. Thompson as Sales Mgr. of the Food Container and Drink Vending Div.

CONVERTERS

Bruce Carton Expands

MEMPHIS, Tenn.—Announcement is made that the Bruce Carton Co., paper products concern, is expanding its operations here with leasing of a large, clear-span building on two and a half acres at 546 Weakley street. It is understood the lease contains a special option for the company to purchase the building and ground, which will enable the firm to plan increased facilities as its requirements demand.

Officials pointed out that the new site is served by the Union Railway and the modern, well-lighted building of masonry construction contains approximately 25,000 square feet of floor space. It has modern presses and equipment for streamlined production on par with any plant in this section. "We hope to be in full operation by September 1, and will employ about 100 persons," the management stated.

Bruce Carton Company manufactures folding paper cartons, paper boxes, paper containers, advertising displays and allied paper products. Jay Bruce is president and sales mgr.; Parker Bruce, vice-president and gen. mgr.; H. L. Brunner, secy-treas.

Walter Duffy Honored

WATERVLIET, N.Y.—Walter J. Duffy, who retired on July 1 as special accountant for foreign business at the Behr-Manning Co., was guest of honor at a testimonial dinner held recently at the Troy Club. Among those who paid tribute to him during the affair was John O. Amstuz, vice president of the firm. Elmer E. Oathout served as toastmaster.

Schoenthaler to Central Waxed

CHICAGO—E. P. Schoenthaler, formerly of the H. P. Smith Paper Co., is now a member of the executive staff of the Central Waxed Paper Co.

Grand Rapids to McLaurin Jones

DETROIT—Grand Rapids Paper Co. has been sold to the McLaurin Jones Co., of Brookfield, Mass., makers of gummed, coated and specialty paper. The local firm was formed last year to take over the paper converting division of the Tanglefoot Corp.

MERCHANTS

Hammermill Agents to Meet

ERIE, Pa.—Invitations have gone out from the Hammermill Paper Co. to its 160 wholesale distributors in the U. S. for the 36th Annual Conference of Hammermill agents to be held in Erie, August 25-26.

The business sessions and recreational activities will be held at Kahkwa Club and will be preceded by a session of the Advisory Committee of Hammermill Agents on August 24.

Bloom Adds Wheelwright Line

BOSTON—J. Bloom & Co., manufacturers' representatives, have become New England agents for Wheelwright Papers, Inc., Leominster, Mass., handling their full line of Bristols, Cut Cards, and Round Corner Cards. The company is shortly to start a complete advertising campaign distributing their samples throughout New England and Eastern Canada.

Jacob Bloom, head of J. Bloom & Co., has just returned from an extensive trip throughout Europe and Asia, where he had a chance to observe conditions among manufacturers and jobbers.

New Location for Frazier

ALBANY, N. Y.—W. H. Frazier Paper Co., Inc., has purchased the former property of the A. A. Walter Company Inc. at Church and Lansing Streets. Reported purchase price was about $50,000. All operations of the paper company are being transferred to the new location from 17-19 Second Ave., original site of the paper business.

Rammacher Launches Corp.

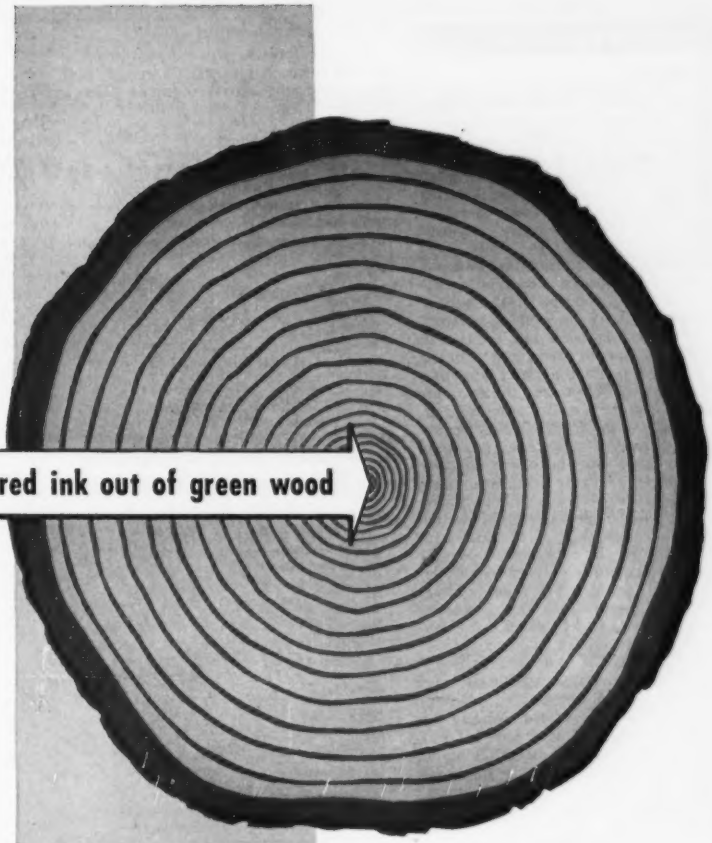
Frank L. Rammacher until recently for many years with Paragon Paper Co., announces the termination of his connection with Paragon Paper Company and the formation of Rammacher Paper Co., an Ohio corporation with offices, suite 407, 6 E. 4th Street, Cincinnati, Ohio.

Metropolitan BDP Outing

NEW YORK—Thirty-second annual outing of the Metropolitan Bag & Paper Distributors Assn., Inc., will be held at Cold Spring Country Club, Cold Spring Harbor, L. I., on Thursday, Aug. 11. Reservations should be made before Friday, Aug. 5, the Outing Committee states.

BALDWIN INSTALLS LAWSON CUTTER

Problem: paper, paper everywhere and lots of lifts to cut. Result: this newly-installed Lawson hydraulic-clamp, 52-inch paper cutter at the warehouse of the Baldwin Paper Company, Inc., in New York. Frank Kennedy (second from right), Asst. to Baldwin's president, Sam Himmell, watches as operator Abe Rabinowitz gets the feel of his new charge, while E. P. Lawson salesman, Lester M. Reiss (right) looks on. Baldwin has just completed modernization of its warehouse facilities, which included purchases, in addition to the cutter, of three new telescoping pallet machines. Paper stocks in the warehouse are now completely palletized, enabling easy and rapid transfer of lifts from storage to cutter.



how to take the red ink out of green wood

Today, profit-wise mill owners reduce costly shut-down time, speed production by keeping pitch dispersed with Mertanol 7L. This synthetic organic sulfonate, developed by Monsanto research, eliminates expensive pitch troubles prevalent in summertime and in unaged wood:

Spotted paper, plugged screens and wires, stuck paper on drier cylinders and pitchy felts are all eliminated by adding as little as 2 to 6 pounds of Mertanol per ton of dry stock at the paper beaters.

With summer (and more green wood) on its way, you will want more information now on Mertanol 7L. Clip the handy coupon below. Mertanol 7L: Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY, Merrimac Division
Desk PTJM 11, Boston 49, Mass.

Please send me full information on Mertanol 7L for pitch control.

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Firm _____

Address _____

City _____ Zone _____ State _____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

FORESTRY

APA Reports

As one of four experts participating in a U. S. Chamber of Commerce-sponsored round table discussion on natural resources, Mr. J. P. Weyerhaeuser, Jr., President of the Weyerhaeuser Timber Co., stated: "Those who insist America is heading down a one-way street to forest oblivion obviously haven't bothered to check all the facts. Certainly, they have not examined prevailing trends in modern industrial forestry. The basic concept of the timber operator has long since changed from one of migratory trade and temporary holdings to one of permanence based on long-range planning and scientific land operation." He traced the development of the tree farming movement in the United States from its 1941 beginning. Today 23 states have organized tree farm projects, and nearly 18 million acres of forest land have been certified in the American Tree Farm System. Mr. Weyerhaeuser predicted by 1951, 30 million acres of American timberland will be included in organized and carefully supervised tree farms. He praised the constructive work of the American Forest Products Industries, Inc., and credited the Keep America Green movement, encouraged nationally by AFPI, with having done much to reduce forest fire losses. He cited a third AFPI-encouraged forestry program—More Trees for America—as another effective movement for increased timber growth in the United States. He termed this program as a project in "grass roots education aimed primarily at farm woodlot owners."

130,000 pine seedlings are being offered by the Forestry Division of the Nekoosa-Edwards Paper Company of Port Edwards, Wisconsin, at no charge to farmers and others interested in planting areas of land not suitable for other crops. In addition to making the trees available for planting on submarginal lands, the Company is offering the use of its mechanical tree planting equipment to those ordering in excess of 2,000 trees. The Nekoosa staff of trained foresters will give advice and help, also on a no-cost basis, to those who receive free trees. This is part of the Nekoosa-Edwards program to perpetuate the sources of raw materials by converting to reforestation the large areas of land not suitable for other purposes, and by this means it is possible for farmers to have a profitable cash crop for the years to come, through sound forest management.

Thinnings at the rate of 10 cords per acre provide the Gaylord Container Corporation of Bogalusa, Louisiana, with 2,000 cords of pulpwood each month from planted lands that are part of the Company's 340,000 acres of managed forests. This leaves 15 to 20 cords to grow for another thinning some 10 years hence.

Mando's Amidon Moves

George Amidon, chief forester for the Minnesota & Ontario Paper Co., is moving his headquarters from Minneapolis to International Falls, Minn.

Freeman Joins SPCA

E. A. Freeman has been employed by the Southern Pulpwood Conservation Assn. as a fourth area forester. Freeman's headquarters are at Ruston, La., and he serves Texas, Arkansas, and Louisiana.

New Tree Farmers†

Escanaba Paper Co., Escanaba, 680 acres.
Manistique Pulp and Paper Co., Manistique, 15,363 acres.
National Container Corp., Ontonagon, 20,000 acres.

† Source, Forestry Digest, AFPI.

MISCELLANY

Pulp, Paper and Board Industry Report

By W. LE ROY NEUBRECH
Chief, Pulp and Paper Section
U. S. Dep't., of Commerce
Office of Domestic Commerce,
Forest Products Div.

There is considerable evidence that the downward trend in prices on many grades of paper and board may terminate before the end of the third quarter. The first factor is the expected complete inventory adjustment by the end of July. Further, sales and consumption of nondurables such as food, tobacco, and some household necessities, which require paper packages and wrappings have not diminished materially during the past 6 months and perhaps some products even increased.

Another factor has been the sharp price cutting on many grades which have been evident since March, with further reductions ranging up to 5 to 10 percent on some items during June. Reports from some merchants and mills state that profit margins have been excessively reduced since equivalent reductions have not been possible in wage rates and general overhead. Some industry executives admit that part of the recent price competition was the result of rash action on the part of the sales department to try to keep up reasonable volume regardless of cost and profit relationships. Since such practices will not be long tolerated by management, it can be anticipated that price relationships between grades and qualities will be stabilized quickly once profit margins show signs of changing to red ink.

Considerable underlying optimism prevails in the paper, board and products industry and trade notwithstanding the several months' downward trend in production and prices. Almost all executives in the industry acknowledge the prevailing readjustment period as a necessary factor toward restoring healthy conditions in all segments, from the pulpwood operation to the consumer of the ultimate product. In an industry affected not alone by broad domestic economic changes but also by international fluctuations in pulp and paper supply, demand, and prices, a more or less complete readjustment from the abnormal postwar peaks takes more than just a few weeks.

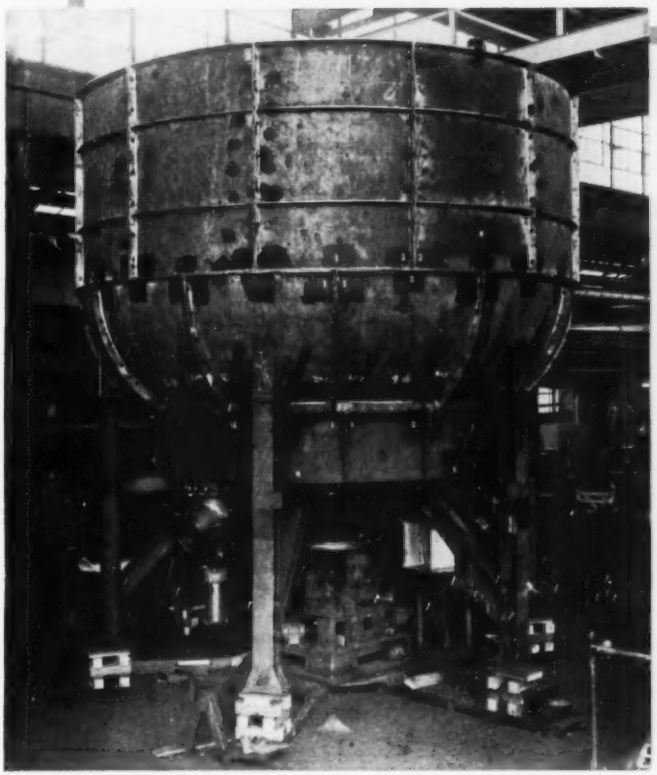
The industry's general recognition and understanding of these basic facts and economic developments leads to more stabilized conditions than otherwise might prevail. There is reasonable evidence that actual ultimate consumption of many grades of paper and board has not declined materially this year against a year ago. This is apparent by observing the relative steadiness in retail sales of nondurables. The greater decline, about 12 percent, in the production of primary paper and board points to a using-up of a considerable volume of pipe line inventories. Such inventories are not alone the actual primary paper or board in the hands of wholesale merchants, converters, book and magazine publishers, or commercial printers; but also in the form of bags, boxes, wrappings, etc., in which most nondurables are shipped and sold. Reductions in inventories of such goods in distribution channels leads to a reduction in the aggregate paper and board inventory.

Reports from various sections of the country point to a growing tendency toward shutdowns for mass mill vacation periods in many paper consuming industries, as well as the pulp and paper industry itself, starting with the July 4th holiday week-end. Whereas in prewar years it was customary for a large segment of the paper and board industry to shut down for vacations and overhauling, the extent was limited from a few days to a week or so. In the war years and postwar years vacations were scattered whenever feasible. This year, with union contracts calling for longer vacations for veteran employes, many mills report they expect to remain down for 2 weeks and in some instances for 3 weeks or more. When July data on production become available they should be scanned with this in mind. Industry executives generally are hopeful that this temporary breathing spell in output of many goods will allow for a cleaning up of inventories and form a basis for solidification in the level of production and prices, consumers may continue to resist buying to the full extent of actual purchasing power.

Manufactures

Whereas there is no expectation of any spectacular rapid upturn in demand for paper and its products, there is considerable confidence that before the third quarter is completed a definite strengthening in buying, as well as perhaps prices may occur. In appraising statistical facts, it is most important to keep in mind the relationship of one year to another in terms of the prevailing conditions in each year. For example: Even though paper and board

For Protection of paper products, both have *Stainless-Clad Steel* tubs



Laboratory Hydrapulper by Shartle Bros.; its 3-foot tub is Stainless-Clad Steel.

This Shartle Bros. Hydrapulper has an 18-foot tub made of Type 304 Stainless-Clad Steel. Erected at the Shartle Plant for checking and match-marking of parts prior to shipment to the mill, this Hydrapulper was shipped knocked-down, and assembled in the paper mill by welding.

No metallic contamination of materials processed in these Hydrapulpers! Only stainless steel—highly resistant to corrosive attack and abrasion—comes in contact with them. That stainless steel is permanently bonded to steel backing plate, giving the necessary structural stiffness and strength.

Lukens furnishes Nickel-Clad, Stainless-Clad, Inconel-Clad and Monel-Clad Steels to builders of equipment supplying your industry. Thus, those manufacturers are able to give you products offering all the advantages of these *solid* corrosion-resistant metals at the lower cost of *clad* steels.

Claddings are usually 10% or 20% of total plate thickness, depending upon the service on which they are to be used. All Lukens Clad Steels are available in the extra-smooth sodium hydride finish, making them extra easy to keep clean.

CLAD METAL STEEL

Ask your supplier to quote on equipment made of Lukens Clad Steels. And for more information on these materials, write for Bulletin 470. Lukens Steel Company, 403 Lukens Bldg., Coatesville, Pennsylvania.

LUKENS
Nickel-Clad Stainless-Clad
Inconel-Clad Monel-Clad
STEELS

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

production from month to month this year has shown a progressively greater percentage decline from the equivalent month of 1948, does not mean that the actual volume of paper and board overall has been declining to the same degree. It must be recalled that in 1948 there was a strong demand prevailing for paper and board which, coupled with new mill capacity coming into production from month to month, resulted in a comparatively steady upward month to month trend in production during most of last year.

Paper and board production in the first 5 months of this year was down approximately 12 percent below the equivalent period of 1948. There was, however, a considerable variation in the relative declines in the major types of paper and board. For example, according to Census data, groundwood printing papers and sanitary papers declined only 4 to 5 percent while domestic production of newsprint was up 12 percent. On the other hand, such items as absorbent and building papers were down as much as 25 percent below last year. In the paperboard field, container board dropped 15 percent while folding box board was down 8 percent. The greatest decline in any grade was in building board which recorded a 30 percent drop.

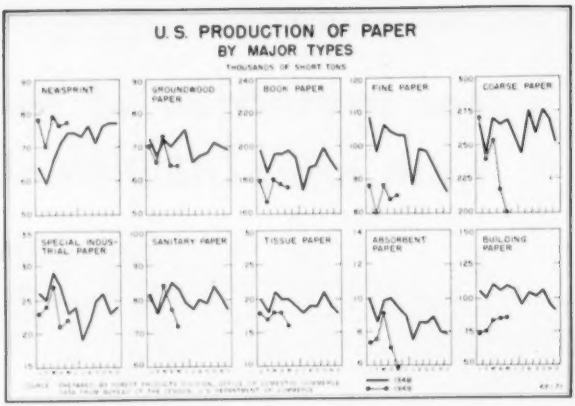
These figures indicate that at least some segments of the industry have suffered greater reductions in days of operation as well as competitive conditions than some of the other segments. They also point to various degrees of competition between integrated and nonintegrated mills making the same or similar items. In May this year wood pulp consumption by integrated paper and board mills was down 13 percent below May of 1948, whereas in similar comparison wood pulp consumption by nonintegrated mills dropped 22 percent.

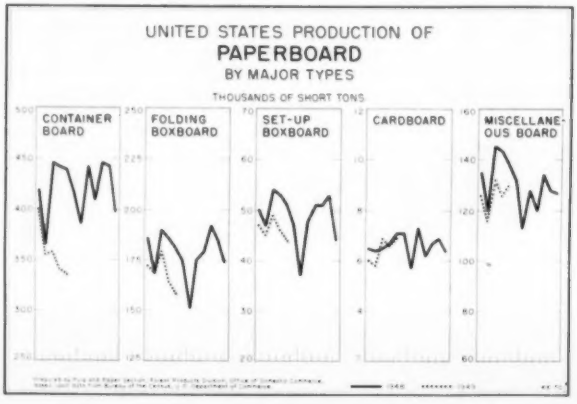
Keen competitive conditions throughout the industry generally have for some time forced attention to quality consciousness. This is disclosed by Census data which pointed out that consumption of waste paper declined nearly 22 percent for the first 5 months of this year below a year ago; straw declined about 33 percent in similar comparison; whereas wood pulp consumption in like comparison declined only 7 percent. Although there has been reported a declining trend in the use of substitute fibers such as waste paper in the white paper field, probably the greatest drop has been in the switch from jute lines to kraft liners. It is believed that for the most part adjustments have been completed in terms of quality standards which is still another factor engendering more confidence throughout the industry.

Some paper merchants as well as mills were heartened by comments made at a recent purchasing agents' meeting in Chicago which expressed a feeling that distributors' inventories in many lines were very low and that any upturn in demand might easily catch suppliers unprepared. The question was raised whether reasonable preparedness in terms of well balanced inventories of sufficient volume did not at this time outweigh undue caution.

According to Association weekly data, paper and board mill production in June held up reasonably well in comparison with weekly output in April and May. At least some mills reported orders during the month from many customers who saw fit to purchase adequate stocks to take care of customers' needs during the July mill shutdown period.

The National Forecast of the Regional Shippers Advisory Boards as furnished to the Car Service Division of the Association of American Railroads indicated that for the third quarter of 1949 there was an expected 10.2 percent decrease below the same period of 1948 for the United States as a whole in carloads of paper and board. Should this forecast prove reasonably correct there would be a very definite leveling off in production during this period which seems to correlate with some of the industry comments, cited above. Another indicator on the more optimistic side of the picture has been the trend in foreign trade in paper, board and allied products in the first 5 months of this year. Exports, while never large in relationship to domestic production, nevertheless increased about 1 percent above the first 5 months of 1948. Imports, comprised primarily of newsprint, increased 7½ percent indicating that the U.S. market for newsprint has not yet slackened.





Groundwood Printing, Book and Fine Paper

Production of groundwood, book and fine papers in May remained steady in comparison with April and no noteworthy changes were reported throughout the country. Competition, however, in this field remains keen but with some degree of optimism prevailing the same as in other segments of the industry. One report at least points to some apparent increase in demand for paper by the job printing industry brought by an upturn in advertising by some firms making an effort to offset the decline in certain lines of business.

Coarse Papers

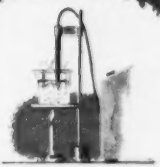
In the entire field of paper and board, one of the last segments where supplies came into balance with demand was in most grades of coarse paper.

VIRTUALLY UNBREAKABLE!

So *strong* that the pH-sensitive bulb can withstand as much pressure as the thick stem itself!

Abrasion resistant—unusually rugged for long life and reliable measurement even in highly abrasive slurries!

Chemical durability—excellent in the strongest acids and alkalis . . . even at elevated temperatures!



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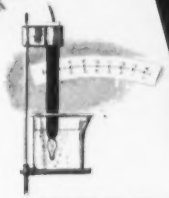
30° to 130° C at high pH—with the new high temperature—high pH glass.

—20° to 100° C—with the new general-purpose glass. Will withstand even repeated freezing.

Now- NEW BECKMAN pH Electrodes



UNPRECEDENTED pH RANGE!

0 to 14 pH—with the high-temperature high-pH glass . . . *only small reproducible deviation near extreme limits, even at high temperatures.*

0 to 11 pH—at room temperature and 0 to 10 pH at boiling for the general-purpose glass . . . *without correction for sodium ions!*

IMPROVED CONSTRUCTION!

Simplified, heat-resistant construction eliminates wax filling . . . retains patented Beckman internal shielding . . . increases measurement precision.

Only *Beckman Glass Electrodes* offer all of these features:

▶ **RAPID RESPONSE** . . . accuracy with speed and convenience.

▶ **STABILITY** . . . to match the high precision of BECKMAN pH METERS.

▶ **INTERNAL SHIELDING** . . . gives complete freedom from outside electrostatic interference.

▶ **INTEGRAL LEADS** . . . Continuous insulation into the electrode . . . connections located on protected panel board.

▶ **EXTREME TEMPERATURE RANGE** . . . Several types permit use from below freezing to boiling *and above!*

▶ **ENTIRE pH SCALE** . . . *Very small* sodium ion errors . . . e.g., with high-temperature high-pH glass, only 0.2 pH deviation at 13.7 pH in 1 N sodium hydroxide.

▶ **FACTORY SEALED** . . . rigidly tested . . . no maintenance.

▶ **UNIQUE CHEMICAL DURABILITY** . . . in alkali . . . in acid . . . in dilute solutions.

And . . . *REALLY TOUGH* . . . can even be used as a stirring rod!

These new electrode glasses are now being used in several Beckman electrode styles. As rapidly as possible, they will be available in the full line of Beckman Glass Electrodes.

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However, since that time there has been a noticeable drop in orders resulting in a 10 percent decline in production in the first 5 months of 1949 below a year ago. Wrapping papers, however, as a group have held quite strong showing an increase of 1½ percent, and bag paper was up 9 percent. The largest declines which offset the plus items were in shipping sack paper, down about 35 percent, and converting coarse paper, down 16 percent.

Sanitary, Tissue, and Absorbent Papers

Although Census data indicate that production of sanitary, tissue, and absorbent papers during the first 5 months of 1949 was below that in the corresponding period of last year, reports from Commerce Department Field Offices reveal that supplies are ample to meet demand.

Boards

The demand for most grades of paperboard and consequently its production follows very closely the general level of business activity. Production of liner board and corrugating material was approximately 14 to 15 percetn below the first 5 months of 1948 with container chip board showing an even greater decline of over 18 percent. Folding boxboard, which encountered slackened demand over a year ago, showed only an 8 percent decline.

Similar to the paper mills, many paperboard mills anticipate a sharp falling off in July production and sales in view of the extended shutdowns of the many other industries using their products for the packaging of various manufactured goods.

EXPORTS . . . . .

Lose A Billion Annually

WASHINGTON—An estimated possible billion-dollar loss annually, to United States exporters through inadequate or improper packaging of goods for foreign shipment, is reported by the Department of Commerce.

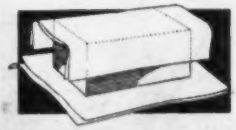
The department's report on export losses stresses importance of proper packaging for foreign shipment, and points out that many U. S. industries are not only losing goods but foreign markets, because their products, although superior in quality, arrive at foreign destinations in poor condition.

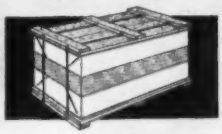
Protective Packaging Competition

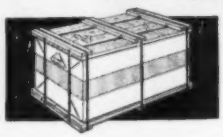
The Society of Industrial Packaging and Materials Handling Engineers is sponsoring a Protective Packaging Competition with respect to all types of export containers in connection with its annual exposition in Detroit on October 4 to 6. Information may be secured from the Society whose address is—Suite 705, 20 West Jackson Blvd., Chicago 4, Ill.

The Packaging Committee of the Maritime Association of the Port of New York feels that this contest is in the interest of better export packing. It is hoped that this will serve as a medium for presentation of new packaging materials and methods. The packaging displayed will be that actually in use by exporters and should therefore be practicable from an expense standpoint. The committee also wishes to record its hope that exporters will demonstrate their interest in the improvement of American standards of export packing by submitting examples of fine American packing which will serve as a model for others shipping comparable goods, and that the exposition in Detroit will be well attended by all who are interested in export packing.

BALES . . .







Steel strapped, wood top and bottom waterproof wrapped bales are used for shipping all grades of wrapping paper where bundle protection is not sufficient, and printing grades where the value of the paper does not require case packing.

1. WEIGHT & SIZE:

Usually 200-500 lbs. gross.
Maximum size sheets 44 x 64.

2. INTERIOR & EXTERIOR PACKING:

a. Sealed packages or unsealed sheets are divided into required bale weight and size.

b. Apply one lap of Mill Wrapper, minimum basis 24 x 36 100 lbs., all around.

c. Next apply one overall wrapper of asphalt laminated waterproof kraft basis 30/30/30 or equal and seal all seams with 4" basis 60 lb. waterproof tape.

d. Apply two overall Mill wrappers, minimum basis 24" x 36" 100 lbs.

e. Wrap bales snugly to prevent bulging when straps are applied.

f. Secure all seams and folded ends with basis 60 lb. kraft sealing tape.

3. WOOD TOP & BOTTOM STRAPPING:

a. Make top and bottom of each bale of solid wood boards, preferably ⅛". Pine, ash or cedar is recommended.

b. Make each top and bottom with three cleats—one at each end, one in the middle. Minimum cleat size ¾" x 3½"—grooved 1/6 the distance from the ends of each cleat, to hold 2 bands of steel strapping running lengthwise.

c. Apply ¾" x .023" rust resisting steel strapping—3 straps girthwise, 2 lengthwise with sufficient pressure to insure a firm compact bale. Staples are strongly recommended to prevent straps from slipping.

GUIDE FOR EXPORT PACKING

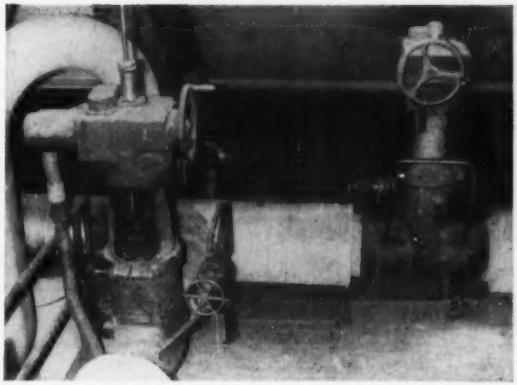
One of the five pages of the recently issued "Guide for Export Packing of Paper," prepared during the past year with considerable effort of the U. S. Paper Exporters Council through its committee on packaging in cooperation with the Export Paper Assn., underwriter organizations, the Maritime Assn. of the Port of New York, et al, as a service available to the manufacturing industry. Similar pages instruct in the export packing of bundles of paper, cases, carton and rolls. Each specifies weight and size recommended, interior packing, and, in addition, construction of cases and cartons with full material details. The guide is a wall chart, size 11x18 ins., printed on cloth, ready to hang. Write to U. S. Paper Exporters Council, 165 Broadway, Room 2130, New York 6, N. Y.

International Wallboard Conference

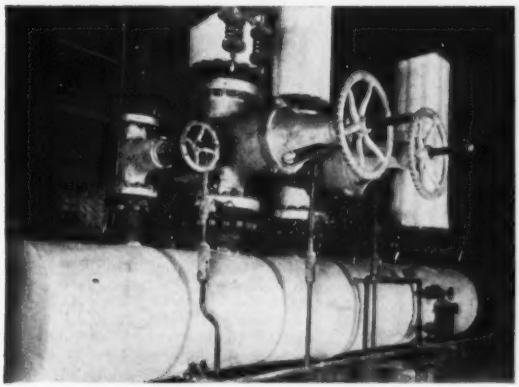
Final Program

NEW HAVEN, Conn.—Final details have been announced of the forthcoming International Conference on Wallboards which will be held on Sept. 16, 1949 in Cambridge, Mass., by the Northeastern Wood Utilization Council in cooperation with Harvard University.

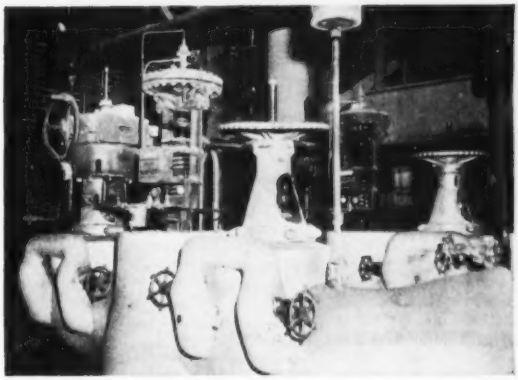
Specialists from Sweden, Switzerland, Italy and this country will deliver papers on both the dry and wet pro-



Walworth Motor Operated Series 900 Pressure-Seal Cast Steel Gate Valves.



Walworth Series 600 Pressure-Seal Cast Steel Gate Valves.



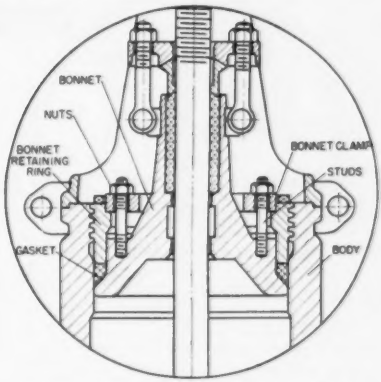
Manually operated and motor operated Walworth Series 900 Pressure-Seal Cast Steel Gate Valves.

WALWORTH
PRESSURE-SEAL
CAST STEEL VALVES

The bonnet and body design of Walworth Pressure-Seal Valves is such that the pressure within the valve is used to prevent leakage at the junction of the bonnet and body. Sudden temperature and pressure changes do not affect this tightness. Bonnet flanges and studs are eliminated and the weight of the valve is reduced.

An improved disc design provides flexibility, and helps keep seats tight, even when the valve body may be distorted by pipeline stresses, or by temperature and pressure changes. This improved disc design makes it easier to open and close this valve.

Walworth Pressure-Seal Valves are easy to disassemble and assemble, and are the most satisfactory valves for high-pressure, high-temperature service. They are available in Series 600, 900, and 1500 and in a wide range of sizes and types. For further information, see your nearest Walworth Distributor, or write: Walworth Company, 60 East 42nd Street, New York 17, N. Y.



A cross section of the bonnet joint assembly of a Walworth Pressure-Seal Cast Steel Gate Valve. The internal pressure is utilized to make the body-to-bonnet joint tight.

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cess of manufacture of wallboards from wood and wood waste. The production of hardboards will be stressed. In the program are included papers by six manufacturers of wallboard products who have been operating on a commercial scale with proven results. New developments in resins will be discussed by the Monsanto Chemical Company and equipment developments will be discussed by the Lake Erie Engineering Corporation.

In order to insure a round table method of discussion, the attendance will be limited to 75. Those wishing to attend should correspond directly with Mr. Edgar L. Heermance, executive secretary of the Northeastern Wood Utilization Council, P.O. Box 1577, New Haven 6, Conn.

Northeastern Wood Utilization
Program of
Wallboard Conference
September 16, 1949
Cambridge, Mass.

10:20-10:40 (1) Pulp Preparation for Wallboard Manufacture—A. J. A. Asplund, A. B. Defibrator, Sweden.

10:40-10:55 (2) "Xylon"—A semi chemical process for Wallboard—Paulo Marpillero, Azienda Bravetti Industriali, Italy. (Presented in summary form, the full text to be printed in the proceedings).

10:55-11:10 (3) The Manufacture of "Interwood" Wallboards—Oswald Wyss, Interwood A. G., Switzerland. (Presented in summary form, full text to be printed in the proceedings).

11:25-11:45 (5) "Durisol" Lightweight Construction Materials—John D. Dale, Durisol, Inc., New York City.

11:45-12:05 (6) The Production of Hardboards from Wood Waste with Resin Binders—Donald F. Othmer and Louis Ricciardi, Brooklyn, N. Y.

1:40- 2:10 (7) Wood Waste Boards Using Resins—T. W. Sears, Monsanto Chemical Co., Springfield.

(8) Symposium on Resin Bonded Wallboards.

2:10- 2:35 (a) Resin Bonded Wood Waste Panels—Thomas H. Vaughan, Hampton, S. C.

2:35- 3:00 (b) Phenolic Bonded Board — J. Walter Cobb, Jr., Cobbwood, Inc., Hope, Arkansas.

3:00- 3:25 (c) The Development of Plaswood Products — Robert A. Caughey, Southegan Mills, Wilton, N. H.

3:25- 3:50 (d) The Continuous Manufacture of Resin Bonded Wallboard—Major Keith Trevor, British Artificial Resin Co., Ltd., England.

3:50- 4:15 (e) The Production of "Novopan" Board — Fred Fahrni, Switzerland and Warren C. Smith, Wonderwood Corp., California.

4:15- 4:40 (9) Equipment for Wallboard Manufacture—H. D. Thweatt, Lake Erie Engineering Corp., Buffalo.

4:40- 5:00 (10) Concluding Remarks & Summary—Robert S. Aries, Northeastern Wood Utilization Council.

Pacific Industrial Conferences

SAN FRANCISCO—"Twenty thousand chemists, chemical engineers, and industrial executives from all over the nation and many other countries are expected to attend the Pacific Industrial Conferences which will run concurrently with the Pacific Chemical Exposition at the San Francisco Civic Auditorium, November 1-5, says Dr. Richard Wistar, chairman of the California Section of the American Chemical Society.

There will be 14 one- and two-day conferences presented by the following organizations: Agriculture and Food chemistry Division, American Chemical Society, California Section; American Institute of Chemical Engineers, Northern California Section; American Institute of Mining Engineers; California Redwood Ass'n.; Federation of Paint & Varnish Production Clubs; Forest Products Research Society, Northern California Section; Market Research Department, San Francisco Chamber of Commerce; Northern California Instrument Ass'n.; Northern California Rubber Group; Pacific Insecticide Institute Petroleum Division, American Chemical Society, California Section; Society of the Plastics Industry, San Francisco Section; Western Market Research Group; and World Trade Department, San Francisco Chamber of Commerce.

"These programs will present world-famous speakers and subjects vital to the continued industrial growth of the nation," Dr. Wistar added.

AUSTRALIA

April Imports

Imports of newsprint into Australia during April totalled 11,583 tons (11,291 tons in reels and 292 tons in sheets). Main shipments were from Sweden and Norway, with the U.K. third, Finland fourth, and Canada a bad fifth.

Imports of other printing papers during April were as follows: (all figures in hundredweights of 112 pounds)—imitation art, 1,409 (U.K. 1,380, Sweden 21, Norway 8); machine processed coated, 515 (all from U.K.); offset embossed, 26 (all from U.K.); other offset printing, 397 (U.K. 282, Sweden 115); lithographic machine glazed, 369 (Normay 197, U.K. 118, Sweden 54); other machine glazed, 528 (Norway 190, Sweden 171, U.K. 167); esparto, one side supercalendered, 264 (all from U.K.); other one side supercalendered, 280 (all from U.K.); two-sided supercalendered, 181 (Sweden 117, Norway 64); machine finished, 376 (U.K. 237, Sweden 139); other printings containing 25 percent or less mechanical pulp, 925 (all from U.K.); other printings, including magazine, 17,205 (Sweden 6,934, Norway 6,420, U.K. 3,572, Finland 279); and glazed imitation parchment, 552 (Sweden 290, Finland 205, Czechoslovakia 57). There were no imports whatever from the United States.

Tasmanian Newsprint Mills

Mr. Joshua B. Powers, who has been visiting Australia from the U.S., recently looked over the Boyer newsprint mills in Tasmania and giving his impressions to the editor of *Newspaper News* (Sydney). Mr. Powers said: "Only incredible vision and courage could have achieved the impossible task of establishing these mills. Often in the U.S. and Canada I have heard the young Tasmanian industry described as the 'miracle mills' which turn hardwood into good newsprint. My own visit has confirmed the accuracy of this epithet. The whole setup made an extraordinary impression on me. I saw every phase of manufacture and then went into virgin forest and stood beside huge hardwood giants varying so much in quality that not infrequently successive batches of logs necessitated some change in the formula of manufacture." He would not single out any of his hosts. The "splendid combination" of enthusiastic executives "will have the infinite satisfaction of controlling a very big expansion in output next year," Mr. Powers said.

Pulp and Paper Project

The Commissioner of State Forests, N.Z., replying recently to Sir Cecil Leys, chairman of New Zealand Newspapers Ltd., who had expressed concern that the Government seemed determined to go ahead with its establishment of a pulp and paper manufacturing project without sufficient detailed advice and examination, said "We are going into this scheme with our eyes wide open." He went on to declare that the Government had conferred with pulp and paper manufacturers, with makers of machinery, laboratory scientists, economic experts and with many other persons fitted to advise on the scheme. "The Rust Engineering Company of Pittsburgh, U.S.A., has made an independent report," he concluded, "which establishes that the project is an attractive investment, as well as strategically desirable in view of N.Z.'s remoteness from present supplies."

Fire Killed Timber For Kraft

Fire-killed timber at Maryvale, Victoria, which has been cracked by the action of sun heat and is unsuitable for building purposes, is now being used by the paper industry for the manufacture of brown papers.

Australian Paper Mftrs. Ltd., which uses 1,000 units of such timber each week for pulping, has arranged for a second debenture issue of £1,000,000 to finance post-war expansion. Funds provided will be drawn on as progressive payments become due for new machinery, plant and buildings.

Edwards Dunlop & Co. Ltd., wholesale paper merchants of Sydney, report a net profit of £52,462 for the financial

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year to April 30th, 1949, compared with the £48,100 of the previous 12 months. Ordinary dividend remains steady at 10 percent. Directors report that during the second half of their trading year large supplies of Scandanavian writing and printing paper landed in Australia and the market became oversupplied at fairly high prices, but in January a strong fall in the prices of leading Scandinavian lines was announced. This necessitated a fairly heavy writing down, which was accomplished without drawing on the large reserve which had been built up.

Mr. B. Burchardt, representing the Forssa Bruk Co., cardboard manufacturers of Sweden, is at present touring Australia and New Zealand on business.

Mr. N. J. Murray, managing director of Pacific Paper Sales Pty. Ltd., Sydney, is at present en route to Antwerp. After a brief stay on the Continent he will visit the U.K. and the Scandanavian countries to make a general survey of the paper industry.

Australia Develops New Fiber†

Substitute for Jute and Sisal

SYDNEY—Australia has discovered a new fiber from which it is expected that twine, wool packs, sacks of all kinds and chemical pulp can be produced. This fiber is obtained from the Canna indica, which is more commonly known as the Canna lily. This plant, grown in botanical and other gardens, is tenacious and grows prolifically under practically any conditions, resisting even four degrees of frost.

The fact that the Canna carries a fiber capable of being spun had never been investigated because of its high water content. However, despite this high water content, it produces a similar percentage of fiber to sisal and other fiber-bearing plants, and it matures in twelve weeks as against years for most of the other fibers.

Australia's imports of jute, sisal and other fibers amounts to about £15,000,000 per year, most of which is obtained from India and neighboring countries. Long fibers for the production of bags and wool packs have always been grown in cheap-labor countries, because no fiber-producing plant which could be mechanically harvested and easily treated at a price to compete with cheap-labor fiber had, until now, been discovered.

Before Mr. Eric Bedford began his experiments, practically all previous research had been to discover the existence of an inexhaustible growth of a wild fibrous material and not in the direction of discovering a vegetable growth which could be cultivated and converted to fiber cheaply.

Mr. Bedford worked on an entirely new theory, i.e., if a material could be found which could be mechanically harvested, mechanically collected, simply treated, and that would also give a high poundage per acre, then it would not matter if its water content were high when green, so long as it was left on the field during mechanical harvesting. It has been found that the high water content makes it possible to isolate the new fiber by a simple mechanical process, a method quite impossible with all materials low in water content.

Harvesting Machine and Process Invented

Having found the plant, the discoverer set out to invent a machine and a process which would be patentable and which would harvest the material and leave the bulk of its wet weight upon the field.

Provisional Patent Application No. 24046/48 relates to "An Improved Method and Means for Obtaining Cellulose". The application covers an improved harvester-crusher, a factory process of wet threshing to obtain fiber for the making of thread and sacking for bags, and a chemical treatment for the production of cellulose for textiles, rayon and chemical pulp for the production of paper. The harvester-crusher has the orthodox type of cutting knives, a conveyer which runs the material through a series of rollers, and a series of beaters which make the material into a mat which is wound on a drum at the rear end of the machine. As each drum is filled, it is let down to the field, and an empty drum is placed in position to take a further cutting of the matted fiber. The drums are then loaded on trucks and taken to the treatment plant, where they are arranged on holders above a travelling conveyer belt. The fibrous material is then fed to the conveyer, and a further treatment of beating and washing is carried out until the material is free of the non-fibrous matter. It is then given a final spray wash and, still upon the conveyer, it is admitted to a drying chamber with hot blowers. The material is then ready for combing and to be spun into twine or thread for the manufacture of sacking.

Should a pure cellulose be required for the purpose of manufacturing textiles, viscose for rayon or a chemical pulp for paper manufacture, it is not dried but is conveyed through a vat containing an acid or an alkali, either with or without pressure, and, after cooking, is washed and bleached. By this method the batch system of pressure digestion is eliminated, and a great saving in time and chemicals is effected.

The Canna is the only material known which can be treated so simply and purely mechanically to a stage where the fiber is isolated. All other materials require either hand harvesting, decorticating or retting, and sometimes the whole three of these slow and costly processes are necessary.

The site of the experimental nursery is at Penrith, New South Wales, about twenty miles west of Sydney at the foot of the Blue Mountains. Other nurseries are to be established from which New Process Fiber Pty. Ltd. will plant large areas. It is expected that 1,000 acres, which will give 1,000 tons of fiber, will be planted by next spring.

The director of the Australian Museum of Technology and Applied Science has stated, after investigating the Canna fiber, that it is suitable for the production of bags and twine. Botanists have stated that three crops a year should be possible, and, since the Canna is a perennial, only one planting is necessary to cover a number of years.

It is estimated that 100,000 acres should be planted before Australia's fiber requirements for twine, bags, wool packs, fiber-plaster, backing for carpets and the thousands of other uses to which jute is now applied would be filled.

† Source: "Foreign Trade," Foreign Trade Service, Dep't. of Trade and Commerce, Ottawa.

GOVERNMENT . . .

NME and Contracts Retention

WASHINGTON, D.C. — Requirements as to the length of times records of completed or terminated military contracts must be retained before they can be destroyed were clarified today by the National Military Establishment for the benefit of contractors who are finding the storage costs of these records burdensome.

The Procurement Policy Council of the Munitions Board, which made an analysis of the requirements, stated that under certain circumstances, records may be replaced with acceptable microphotographs, or the contractor may apply for permission to destroy them. The factors which govern contract record retention are as follows:

The only statutory regulation bearing on retention of contractual records is contained in the Contract Settlement Act of 1944, the pertinent portion of which is incorporated into the 1948 revision of 18 U. S. Code 443. In substance, this statute provides that contractual records on war contracts must be preserved until (1) five years after the disposition of termination inventory by the contractor or Government agency, or (2) five years after the final settlement of any such contract, or (3) 31 December 1951. By regulation of the Office of Contract Settlement, however, earlier destruction of these records is permitted provided approval is obtained and properly authorized photographs or microphotographs have been made.

Other statutes affect indirectly the retention of records, although compliance with them is the concern of Government agencies other than the National Establishment. One of these statutes is the Vinson-Frammell Act which limits profit on vessel and aircraft contracts and under which a subject contractor must retain records in accordance with regulations of the Bureau of Internal Revenue for the purpose of substantiating tax returns.

The Renegotiation Act of 1948 presently does not expressly require the preservation of records beyond the per-

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P-19-A

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iod necessary to cover the renegotiation of the contracts involved.

The standard clauses generally inserted in contracts of the National Military Establishment often prescribe fixed periods of time, after completion of termination of a contract, during which contract records must be preserved. Generally, all records pertaining to cost-type contracts must be kept for a period of five years after their completion. Either no time is specified for retention in fixed-price contracts or else a period, usualy of three years, is prescribed. In both types of contracts provision may be made, either in a contract clause or by special arrangement, that any required records may be replaced with acceptable microphotographs.

If a contractor is in doubt as to the length of time his records must be preserved, he should write his contracting agency asking for a decision. Should a contractor find his storage problem to be unusually burdensome and costly, and it is known that all audits have been completed and all other purposes for which the records were retained have been satisfied, he may make a request of the contracting agency for permission to destroy the records.

NYQMPO and Small Businesses

NEW YORK—The N. Y. Quartermaster Purchasing Office, 111 East 16th Street, New York 3, N. Y., has set up a Small Business Liaison Unit, as authorized by the Quartermaster General, it has been announced by Brigadier General L. O. Grice, Commanding.

Establishment of this new NYQMPO staff unit centralizes and implements a program which—designed to foster and maintain friendly and effective cooperation between industry and the Quartermaster Corps—has been carried on to a substantial degree for the past two years by this office.

Primary function of the new unit, said General Grice, is to establish an official and permanent contact for small business concerns to assist them in selling to the New York Quartermaster Purchasing Office—as well as other National Defense Establishment buying offices.

Small business concerns, General Grice added, play a major part in furnishing the Quartermaster Corps with supplies and equipment for use by the U.S. Army. A total of $440,000,000 was expended by the NYQMPO during the fiscal year 1949, representing over 10,000 outstanding awards. On a dollar basis, approximately 52 percent of the total procurement was placed with small business—63 percent based on the number of contracts awarded.

In a constant effort to spread its buying throughout the entire nation, the NYQMPO maintains many continuously changing lists of qualified bidders—located in every part of the United States. Over 35,000 different *names* are included in those various lists, broken down into ten major commodity classifications, approximately as follows:

Clothing	5,400
Cotton and Rayon Fabrics	2,000
Woolen Fabrics	1,000
Knit Goods	2,400
Findings for Garments and Footwear, etc.	1,100
Footwear and Leather, All Types	1,000
Equipage and Personal Supplies	3,500
Chemicals and General Supplies	7,000
Paper and Paper and Forest Products	6,800
Non-Perishable Subsistence	5,200

The above major classification bidders' lists have been further broken down under approximately 300 separate commodity groupings. These, in turn, have been developed into a large number of currently active lists under various specific commodity categories. Responsible manufacturers and dealers throughout the country, can, if desired, have their names added to one or more of these bidders' lists by writing to the N.Y.P.O.

Fair Treatment Assured By QMC

NEW YORK—Considerable publicity has recently been given to statements made by certain so-called "service" agencies, attorneys and others to the effect that they are able to obtain special consideration for bidders and contractors dealing with QMC and other Government procurement agencies in connection with the awarding of contracts and the filing of claims against the Government, including the refund of liquidated damages, NYQPO advised in "Memorandum to Industry", No. 12.

"Practically all QMC buying is effected by the "formal" method of procurement. Invitations to bid are issued which are publicly opened at a stated time and bid prices announced. Awards are then made to that responsible bidder whose bid, conforming to the invitation, is most advantageous to the Government, price and other factors considered. "Negotiated" procurement is made in relatively few instances and only where specifically authorized or provided for by statute.

"In connection with the processing of claims against the Government, including the refund of liquidated damages, the QMC has formulated specific procedures to insure that every such claim receives the most careful consideration, solely on its merits. There is no necessity for any bidder or contractor to employ any special person or agent as his representative in dealing with this office.

"Any person or persons who make representations that they have an 'in' or any special influence with QMC personnel and, therefore, can obtain particular consideration, will not be allowed to appear in a representative capacity in a matter involving a claim against the United States. The best interests of contractors, bidders, and the Government will be served if any such communications or representations as to undue influence are referred to the QMC procurement agency immediately concerned, in order that proper investigation may be made and suitable action taken.

"There is, of course, no objection whatever to legitimate representation by attorneys, agents or other qualified representatives. QMC purchasing offices have adequate staffs of qualified personnel, including administrators, procurement specialists, attorneys, accountants and technicians who are available to answer any pertinent questions either prior to or after award, or incident to the administration of any phase of contracts. All bidders and contractors are assured that fair and impartial advice will be given in every case."

SUPPLIERS . . . . .

Carbon Black Export Assn., a Webb-Pomerene export organization, was presented with a series of recommendations by the FTC for modifying its present operations.

The association was organized for the purpose of exporting carbon black, with stockholder-members listed by the Commission as follows: United Carbon Company, Inc., Charleston, W. Va.; Columbian Carbon Co., New York, N. Y.; Godfrey L. Cabot, Inc., Boston, Mass.; J. M. Huber Corp., New York, N. Y.; Panhandle Carbon Company, Inc., New York, N. Y.; and Charles Enu Johnson & Company, Philadelphia, Pa.

The FTC stated it had made a detailed study of the association's contracts and sales for export policies, and its relationship with domestic trade associations in the field. In this connection, the Commission recommended that National Gas Products Assn. discontinue the practice of joint offices or joint officers with the export group on the ground that "it was incompatible" for the two groups to have such connections.

The Commission also said it had gone into detail as to "Carbexport" activities "in controlling the channels of distribution of the members' product in export trade," but had concluded that "no actual illegal restraint" had been placed on such American intermediaries.

However, among other recommendations, the Commission ruled adversely on granting export quotas to non-member concerns, and on extending the price maintenance policy of the association to non-member competitors; also holding that the association could not make agreements with non-members in which it was stipulated that the latter would follow export prices of the association.

Brown Training School of Industrial Instrumentation, Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Philadelphia, Pa., has scheduled a

To help you enjoy a *carefree* vacation

nothing equals Stainless Steel!

WE don't mean to imply that stainless steel equipment *alone* will guarantee trouble-proof plant operation while you are away — but it certainly helps.

With Stainless Steel to safeguard your product from contamination—to prevent off-quality runs —to withstand careless handling and severe use—you can be reasonably certain that as far as your equipment is concerned you have little to worry about.

The peace of mind that the use of Stainless insures is an intangible benefit often overlooked and hard to measure in dollars and cents. But, in importance, it ranks alongside other well-recognized advantages that Stainless Steel offers. Superior corrosion resistance. Freedom from rust and tarnish. High resistance to heat. Low cleaning costs. Longer service life.

. . .

These superior qualities of Stainless Steel that pay off in bigger production, fewer shut-downs, and in a better, more uniform product also pay *extra* dividends in making vacations a lot more pleasant by quieting that small inner voice that keeps saying, "Wonder how they're getting along without me at the plant?"

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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UNITED STATES STEEL

comprehensive 13-week course and two five-week courses for the period from Aug. 15 to Dec. 2. As in the past the courses are designed primarily for customers, in order that they may obtain maximum benefit from their process control equipment, M. J. Ladden, chief instructor, said.

The industrial instrument maintenance and repair courses will cover millivoltmeter type pyrometers, mechanical potentiometer pyrometers, continuous balance electronic type potentiometers, electrically operated automatic control, flow meters, thermometers, pressure gauges, hygrometers, air operated automatic control, Moist-o-Graphs, tachometers, resistance thermometers, CO_2 and analygraph.

The addition and opening of a new factory to the main Philadelphia plant of the company enables the training school to move to the plant annex where it will occupy double the facilities previously available.

Hercules Powder Co. of Wilmington, Del., announces that Henry A. Thouron, asst. director of sales of Synthetics Dept. since 1947, will join the Export Dept., Aug. 1. Late in Sept., Mr. Thouron will transfer to Holland as special assistant to C. M. Rutteman, director of N. V. Hercules Powder Co. in The Hague, covering sales of Hercules products in western Europe. Before going abroad, he will spend some time in the Wilmington offices of Cellulose Products Dept. and Naval Stores Dept. learning about recent product developments.

Mr. Thouron joined Hercules in 1934 as member of the Naval Stores Dept., was sales representative for that department in N.E. in 1940, when he entered military service. Upon returning to civilian status in 1946, he joined Hercules' Virginia Cellulose Dept., and in Nov. 1946 was named assistant to the director of sales of the Synthetics Dept.

American Wheelabrator & Equipment Corp. has appointed Watson P. Hall an associate of Robert Campbell in its Toronto, Ont., sales office. A graduate of McGill with a degree in Mining Engineering, Mr. Hall has been a member of the firm's service engineering staff for the past three years.

CAMERON'S PRESIDENT

Palmer J. Lathrop was elected president of Cameron Machine Co. to succeed the late Harold Kinsey . . . Actively associated with Cameron since Sept. 1948, a Board member for several years . . . Formerly vice - president, in charge of production, Bristol-Myers Co.

HUBER ELECTS SECRETARY

Spencer W. Pitts, asst. to president of J. M. Huber Corp., has been elected its secretary, also . . . Before joining Huber Corp. in 1945, was for four years in legal division of WPB, and three years with U. S. Dept. of Labor . . . A Yale man, studied Law at Trinity, Cambridge, Eng., awarded LL.B. by Harvard in 1932.

Lincoln Electric Co., manufacturers of welders and electrodes, has completed final arrangements with Austin Co. for the immediate construction of an $8,500,000 plant. The one story structure will contain over 850,000 sq. ft. of floor area on a 65-acre site on St. Claire Ave. between E. 222nd St. and Babbitt Rd., Cleveland. The new plant will be ready in 1950 for the transfer of all manufacturing operations from the present plant, which will be available for sale or lease at that time.

The latest developments in construction will be used—steel frame work for the building will be all-welded, exterior will be aluminum siding completely free from windows, controlled heating and ventilating facilities will maintain the most efficient working conditions at all times, it is stated.

Imperial Paper and Color Corp. executives announced on July 16 that they have been engaged during the past year in an exhaustive study for the development of a pension plan. The plan which has already been discussed with the union groups with whom labor negotiations have been held, provides benefits for both past and future service. The cost of past services to be paid for entirely by the corporation. Future service benefits will be derived from joint contributions by employes and the corporation, the concern matching contributions of employes. In addition, the corporation will also pay for all costs of administering the plan, all assets of which will be held by a corporate trustee in trust for members of the plan. Investments of these funds will be regulated by state laws governing the investment of trust funds, it is stated.

Worthington Pump and Machinery Corp. announces the appointment of John P. McArthur to the position of manager, west coast sales, with headquarters in San Francisco, effective July 1, 1949. Mr. McArthur will supervise the activities of the Los Angeles, San Francisco, Seattle and Salt Lake City District Offices, it is stated.

A graduate of Penn State, Mr. McArthur was born in Altoona, Pa., in 1907. He joined Worthington in 1936 as an estimating engineer in the Philadelphia district office, became a sales engineer two years later, and in 1945 was made manager of the San Francisco district office.

American Can Company has appointed C. Stuart Hall to the newly created post of assistant to the president. Mr. Hall formerly was vice president of Carl Byoir & Associates, Inc., New York public relations firm with which he had been associated since 1938. In his new post he will be located in Canco's general headquarters offices in New York.

American Brake Shoe Co. has appointed Edward R. Anderson, vice-president of the Kellogg Division. District Sales Manager of the company's Pacific district since 1947, Mr. Anderson will continue in this capacity in addition to his new duties. He is located in San Francisco, Calif.

A. E. Broughton & Company, of Glens Falls, New York, announce the appointment of Mr. Edward F. McGonagle, of 27 Garden Street, Belmont 78, Mass., as their exclusive agent for Broughton equipment in the New England area.

Magna Mfg. Co., Inc., have removed their New York City executive and sales office to their plant located at Haskell, N. J. (Telephone Pompton Lakes 7-1299.) All communications pertaining to sales, orders or shipments should be sent to the new address, it is stated.

National Starch Products, Inc., has appointed S. F. Thune, sales manager of the midwestern division with headquarters in Chicago; and F. R. Loetterle, sales manager of the Pacific Coast division.

R. O. Kruger & Co., specialists in screen strap packing felt, are now located in new and larger quarters at 362 W. Erie street, Chicago 10, Ill., where stocks of the specially constructed felt will be carried for immediate shipment.

B-J APPOINTEE

—T. R. (Bob) Colville, recently made advertising manager of Pump Div. of Byron Jackson Co., Los Angeles, Calif. . . . Was asst. program director of radio station prior to war service. Until last Fall, worked in GE's Adv. Div. of Chem. Dept. . . . Born in Schenectady, graduate of Syracuse U.

PULP

Perkins-Goodwin Co.

Established 1846

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PAPER

SUPPLIERS

Chlorinated Benzenes

Monochlorbenzene, paradichlorbenzene, orthodichlorbenzene and muriatic acid are produced as co-products in a continuous chemical process. Monochlorbenzene is utilized as a solvent for paints, varnishes and lacquers, in the manufacture of insecticides, drugs and other organic chemicals. Paradichlorbenzene is a white crystalline material produced in seven screen sizes for a broad variety of agricultural and domestic insecticides, in the control of tree destroying insects and deodorants. Orthodichlorbenzene is a white liquid utilized as a solvent for resins, tars, gums, and in the manufacture of dyestuffs and other organic chemicals. Available in tancars or drums. For details and prices write to Columbia Chemical Div. of Pittsburgh Plate Glass Co., Natrium, W. Va., which is now in production at its new plant.

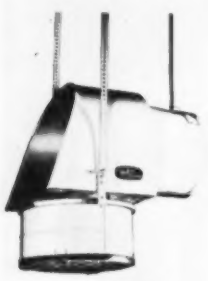
Pepton 22

Pepton *22* is a plasticizer which is incorporated in the latex prior to coagulation at the plantation, adding to the natural rubber outstanding elasticity, low hysteresis loss and adhesive properties, it is stated. Is held responsible for the creation of a new standard of rubber bearing the trade name of No. 1 Ribbed Smoked Sheets—PLUS, also for improved qualities in natural rubber which protect its leading position in competition with synthetic products. For details and prices write to American Cyanamid Co., Calco Chemical Co., Calco Chemical Div., Bound Brook, N. J.

EQUIPMENT

Model 30 Humidifier

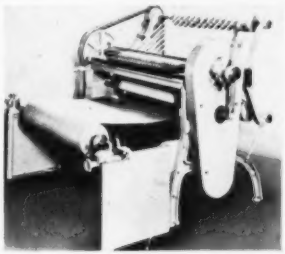
Model 30 is announced as an addition to the manufacturers line which evaporates approximately three gallons of water per hour. Electrical consump-



tion is stated as approximately 230 watts. Connections required are city water supply and electric current. Features elimination of compressors, expensive air or drain piping, and duct work. May be used in multiple to provide uniform, controlled humidity conditions in an enclosure, also suitable for *spot* humidification or for boosting the humidity obtainable from existing systems of any type, the manufacturer states. For details and prices write to Walton Laboratories, Irvington 11, N. J.

Slitter and Rewinder

The slitter and rewinder, contact type, is a light-weight development of the Jacques Slitter, designed to meet requirements of modern operation with hardened steel slitting roll; alloy steel slitter blades; anti-friction bearings; heavy duty frictions, easily adjustable during operation; choice of rewind shafts and arbors. Main slitting roll is of high carbon alloy steel to assure



long service without scoring, is mounted on oversize needle bearings to provide for free running of slitting roll regardless of material or cutter load. Parent roll stand designed to carry heavy rolls of material, up to 40 ins. in diameter; is of welded steel constructions with ample space for cones to be set up to full width of machine. Available in 30, 40 and 45 ins. capacities. Designed to handle a variety of papers, boards, fabrics, plastics and rolls. For details and prices write to Hobbs Mfg. Co., Worcester 5, Mass.

LITERATURE

American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y. Bulletin, "For Instance," No. 45, 1949, periodical on "Molding the Future Through Chemistry." Features "A Brilliant Discovery," story of Titanium Dioxides and new developments.

Bristol Co., Sales Promotion Dept., Waterbury 91, Conn. Bulletin, G620, "Series 500 Absolute Pressure Gauges. Describes instrument and gives data on principle of operation.

Cooper Alloy Foundry Co., Bloy street & Ramsey avenue, Hillside, N. J. Bulletins, "Casting Stainless Steel Centrifugally—in Permanent Metal Molds," a reprint from *Iron Age*, Jan. 27, 1949, and another reprint from *American Foundryman*, May, 1949.

Cochrane Corp., 17th street below Allegheny avenue, Philadelphia 32, Pa. Bulletin, 3250, "C-B High Pressure Condensate Return System." Describes operation, provides charts, tables, blueprint reproductions, cutaway views, installation photographs and endorsements.

Eutectic Welding Alloys Corp., 40 Worth street, New York 13, N. Y. Bulletin, "Welding Notes for Engineers," Vol. II, Issue 8. Features story on the new Eutec-Hand-Omatic, a handguided automatic steel welding electrode.

Elliott Co., Accessories Dept., Jeannette, Pa. Bulletin, A-13, "Elliott Twin Strainers." Provides dimensions of all types and sizes with explanatory sales copy.

Louis Allis Co., Milwaukee, Wis. Booklet, "The Louis Allis Messenger," a collection of illustrated American folk songs and other Americana.

Henry A. Gardner Laboratory, Inc., 4723 Elm street, Bethesda, Md. Bulletins, "Photometric Unit and Exposure Heads, for Measurement of Appearance and Other Optical Properties of Materials, June 1949"; "New Portable 75° Glossmeter," July 1949; "Automatic Blade Applicator for Films," July 1949; "No. 4 Ford Type Aluminum Viscosity Cup," July 1949.

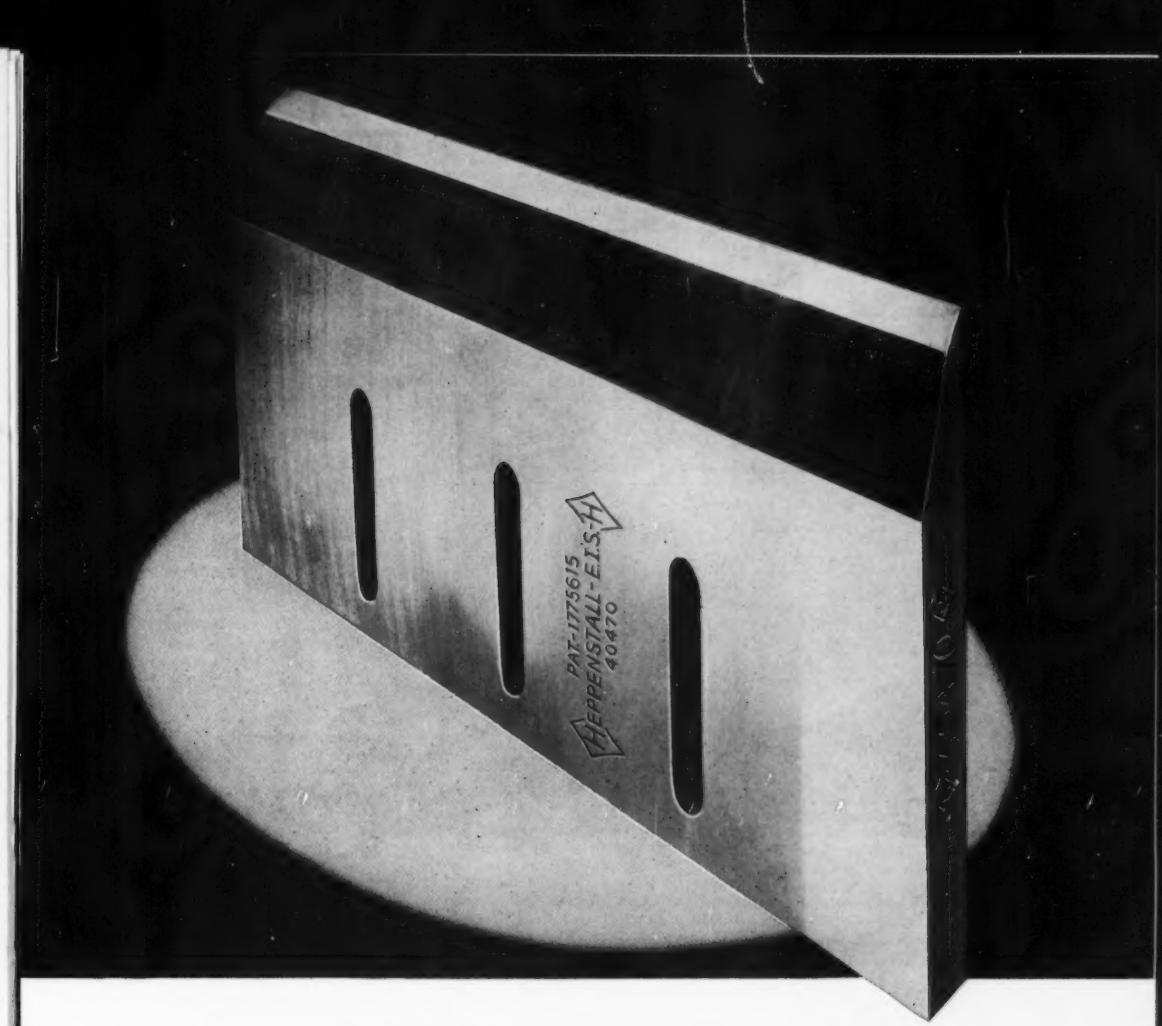
Gits Bros. Mfg. Co., 1846 S. Kilbourn avenue, Chicago 23, Ill. Booklet, "Gits Visual Oilers." Examples include gravity feed, wick feed, constant level, vibrating rod and multiple oilers.

Iowa State College Bulletin, Ames, Iowa. Bulletin 163, "Moisture Relations in the Manufacture and Use of Cornstalk Insulating Board" by O. R. Sweeney and L. K. Arnold.

Lincoln Electric Co., 12818 Coit road, Cleveland 1, Ohio. Bulletin 462, "Lincoln Weldirectory for Mild Steel and Low-Alloy High-Tensile Steels."

Leeds & Northrup Co., 4902 Stenton avenue, Philadelphia 44, Pa. Bulletins, "Modern Precision," Vol. 9, No. 1, feature "Industrial Waste Neutralization Aided by Micromax pH Control;" Vol. 9 1A, "A Picture Tour of the L&N Plant."

Metallizing Engineering Co., Inc., 38-14 30th street, Long Island City, 1, N. Y. "Metco News," July issue, subject, "Save Money Rebuilding Worn Journals with Metallizing, Paper Mill Saves $18,840 on 16 Journals."



The Knife that *changed* an Industry

By manufacturing the *first* solid alloy steel chipper knife, Heppenstall revolutionized the entire industry. For under the most severe service conditions, the solid alloy steel knife proved superior to all others because it retained keen edges *longer* . . . operated *more* hours between grinds . . . yielded more uniform chips with less sawdust waste.

Through continued research, Heppenstall has led the way in chipper knife development. Today, the problems posed by higher disc speeds and harder woods are being solved through the combination of Heppenstall's own electric induction steels *plus* correct knife design.

Certainly, it will pay you to install Heppenstall E.I.S. Knives—the standard of quality in chipper knives.

* Write for your free copy of Heppenstall's handy, new wall card outlining correct chipper knife grinding procedure.

HEPPENSTALL COMPANY · PITTSBURGH 1, PA.

60th ANNIVERSARY
1889 1949

Minneapolis-Honeywell Regulator Co., Wayne and Roberts avenues, Philadelphia 44, Pa. Bulletin No. 47-1, "Belfield Regulating Valves, Pilot Single Seat Fully Balanced, Type FB." Operating principle of Belfield Single Seat PB Regulating Valves is described fully with schematic drawings and dimension charts.

Magnus Chemical Co., Inc., Garwood, N. J. Bulletin, "Magnus Acidex Felt Conditioning," a supplementary bulletin to the "Paper Mill Cleaning Handbook."

Bauer Bros. Co., M. E. Ginaven, Sales Mgr. Food & Milling Div., 1758 Sheridan avenue, Springfield, Ohio. Catalog No. 50, "Bauer Process Equipment." Illustrates complete line of pulp refiners, paper stock classifiers, attrition and hammer mills, etc., for pulp and paper mills.

T. B. Wood's Sons Co., Chambersburg, Pa. Catalog, No. 192 "Wood's V-Belt Drives." Contains stock drive tables, engineering data and examples to guide in selection of v-belt drive. Sections devoted to special drives, sheaves, V-belts and general engineering information.

Package Machinery Co., Springfield 7, Mass. Bulletin, "Problem, Solution, Lesson," sales copy for *Package*.

Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector street, New York 6, N. Y. Bulletin No. 7, second edition, "Liquid Chlorine." Contains latest information on properties of chlorine, containers, equipment and accessories, instructions for safe handling and procedure in case of leakage or accident. Fully illustrated with tables, charts and diagrams.

Shartle Bros., Machine Co., Middletown, Ohio. Booklet, "Hydrafiners." Contains numerous graphs and drawings to clarify subject. Thesis of discussion is "Controlled stock treatment permits the papermaker to produce the type of stock required—having the proper proportion of HYDRAFINER and jordan treatment."

University of Illinois, Office of Publication, 358 Administration building, Urbana, Ill. Book, "Bulletin Vol. 46, April, 1949, No. 57; "Papers Presented at the First Short Course of Industrial Packaging and Materials Handling, held at Chicago, Oct. 4-7, 1948, in Cooperation with the Society of Industrial Packaging and Materials Handling Engineers." Price $1.00, 248 pp.

Supt. of Documents, Government Printing Office, Wash. 25, D. C. Book, "Trees," yearbook of Agriculture, 1949, produced in the Department of Agriculture as a Congressional Document. For sale at $2.00 a copy, 944 pp. Orders now being accepted for delivery in late August. Send check to Supt. of Documents. Contains: The Tree; Trees and Homes; Forests and Men; Lists and Other Aids.

Panalarm Products, Inc., 7218 North Clark street, Chicago 26, Ill. Catalog, *"Series 300 Panalarms, the Universal Safe Multiple Signals."* Explains in detail the various types and applications of Panalarms, described as a "new conception in Industrial Signal Systems."

Sulphite Paper Mftrs. Assn. Inc., 122 East 42nd street, New York 17, N. Y. Booklets, "Paperboard and Paper Food Containers—An analysis of Literature and Appraisal of Their Sanitary Condition," and "Paper and Paper Board in the Food Industry—Public Health Aspects" by Fred W. Tanner, Ph.D., F.A.P.H.A., Dept. of Bacteriology, University of Illinois, Urbana, Ill. These are reprints of Dr. Tanner's articles published in December, 1948, the first in Journal of Milk and Food Technology, the second in American Journal of Public Health.

C. K. Williams & Co., East St. Louis, Ill. Catalog and price list, combining complete product and price data on all pigments and extenders manufactured by the company. Code indentifications have been revised and standardized so that one set of codes now applies to all products, it is stated. New coding also indicates the basic characteristics of each product.

U. S. Dept. of Commerce. Office of Technical Services, Washington 25, D. C. Manual, "Plastics Inspection" dealing with the nature of plastic materials, methods of fabrication, properties and tests. Principal sections cover the applications of plastics in aircraft and aeronautical equipment; terms used in the plastics industry; molding and fabrication of thermosetting plastics; and the inspection testing testing and properties of plastics. Price $2.75, 112 pages. Order should be accompanied by check or money order payable to the Treasurer of the U. S.

U. S. Rubber Co., Rockefeller Center, New York 20, N. Y. Manual "V-Belts." Contains a comprehensive set of drive tables for multiple belts; complete sheave data including constructions, dimensions and weights; fractional horsepower drive layouts; comparison tables with information on quarter-turn drives and hexagon double V-drives.

Worthington Pump and Machinery Corp., Harrison, N. J. Bulletin V-1400-B18, "Vee-Ply, The Quick Detachable V-Belt"; H-450-B35, "Vertical Turbine Pumps, Type Q, Sizes 6" to 14"; W-395-B1, "Self-Priming Centrifugal Pumps, The All Steel Pump"; H-450-B34, "Water Lubricated Vertical Turbine Pumps, Type Q . . . Sizes 6" to 14".

"La Papeterie," 9, Rue Lagrange, Paris, France. Book "Vocabulaire Papetier, Francais-Anglais et Anglais-Francais." *229* pages, price *$2.70* post free. Each section contains 5,000 words and terms in general use in the paper and printing industries.

RULINGS

Congress Studies Hoosac Bill

NORTH ADAMS, Mass.—Paper manufacturers here have been notified that a Congressional Committee has gotten down to business in Washington studying a bill which includes a $1,000,000 appropriation for a start next spring on the Army's $20,000,000 Hoosac River flood control program. Representative John W. Heselton of the First District said that the conference committee on civil functions has already begun its study but would not predict when a report could be expected.

The Committee's task is to reconcile the differences between the Senate and House versions of the Army's civil functions appropriations measure and to blend the two into a single bill. The Senate version included $1,000,000 for working plans and an actual start on the Hoosac River project next spring. These provisions were not in the House bill which, however, included other items lacking in the Senate proposal.

Housatonic Bill Signed

NORTH ADAMS, Mass.—Gov. Paul A. Dever has signed into law a resoultion to investigate pollution of all the Housatonic River from Hinsdale to Sheffield, with the unexplained exception of that section of the river which is in the town of Lee.

The study will investigate the disposal of sewage and industrial wastes from the river banks in the towns of Dalton, Hinsdale, Pittsfield, Lenox, Stockbridge, Great Barrington and Sheffield.

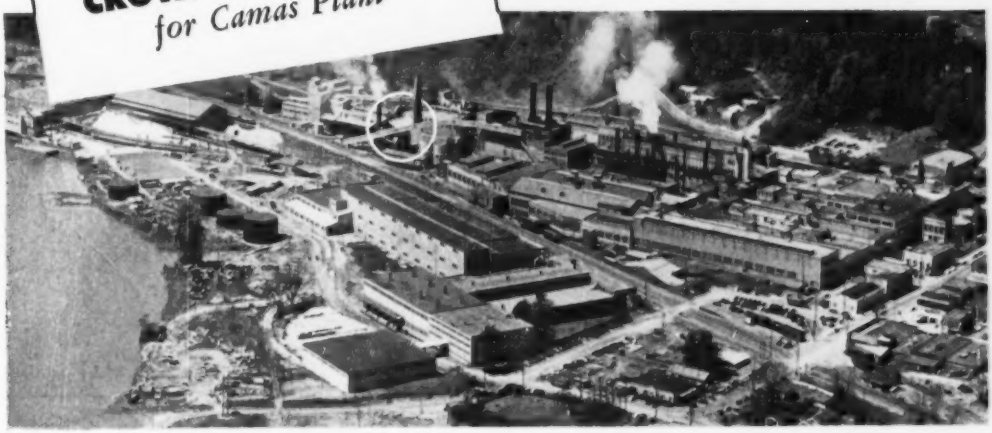
Absence of Lee from the resolution was not explained. In June, Elmer L. Swett, district engineer of the State Dept. of Public Health, had noted the pollution of the Housatonic below the Smith Paper Co., in Lee, and reported:

"Although I have seen the river on many occasions previously, I do not believe I have seen it in a worse condition. The whole surface area of the river below the dam, and as far as it is possible to see along the river south from the bridge, was covered with a light brown scum. If we do not receive a complaint in the near future relative to this condition, I shall be greatly surprised."

Correction

The article "The Wood-Supply Situation in New York State" by V. L. Harper, Northeastern Forest Experiment Station, Upper Darby, Pa., featured article of the Industrial Development Section of *Paper Trade Journal*, July 14 issue, was presented at the 1949 annual meeting of the Empire State Section of TAPPI at Lake George, N. Y. not at the 1948 annual meeting, as shown in the credit line.

Western Precipitation
COTTRELL
again selected by
CROWN-ZELLERBACH
for Camas Plant



New Camas recovery unit one of many successful Western Precipitation paper installations...

WESTERN PRECIPITATION is the organization that—more than 30 years ago—pioneered the first successful application of COTTRELL equipment for collecting soda ash from the recovery furnaces in paper plant operations. And through the years Western Precipitation has continued its leadership in COTTRELL installations with one important development after another.

One of the latest Western Precipitation paper installations is the COTTRELL unit recently completed for Crown-Zellerbach for their kraft plant at Camas. This COTTRELL, recovering soda salts from the black liquor furnace gases, is only one of the Western Precipitation COTTRELL units chosen by Crown-Zellerbach for their paper mills.

In fact, at the Camas plant itself another Western Precipitation COTTRELL unit has been in successful operation for some 8 years, and the success of this installation was an important factor in the decision of Crown-Zellerbach to again install a Western Precipitation COTTRELL in the newly completed expansion to their Camas kraft mill operations.

Throughout the paper industry many other companies have also selected Western Precipitation COTTRELL equipment for their kraft mill recovery units, and the invaluable experience gained through the years by the Western Precipitation organization in this specialized field can be helpful to any paper plant contemplating installation of recovery equipment. Let our engineers study your particular requirements and make recommendations based on over 30 years of first-hand experience in the paper industry—more than 40 years in the design and construction of COTTRELL equipment for all types of industrial applications.

Send for descriptive literature on COTTRELL *equipment*

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Where are your new markets for softer paper products made like this ?

You can make them better and at lower cost with Du Pont Sulfamic Acid*

EVERY DAY, new markets for softened paper and paper products are coming to light. A few of them are shown here. Probably you can think of many more. And today, you can make the paper that will *sell* these markets—easily and economically—with Du Pont Sulfamic Acid.

Just add Sulfamic Acid to the desired amine to get an Amine Sulfamate that softens your paper and also adds a high degree of *fire resistance*—with a single treatment.

BETTER SOFTENING is assured at *all* humidities because Amine Sulfamates do not depend entirely on water pick-up. Paper treated with an Amine Sulfamate retains its softness even after long periods of normal use. And it can be readily printed or glued.

EXTREME YELLOWING RESISTANCE can be easily obtained with a simple modification of the Amine Sulfamate.

LOW-COST... EASILY APPLIED! Du Pont Sulfamic Acid is inexpensive. Added to amines, it can be economically and uniformly applied by immersion or spray.

Where fire resistance without softening is required, the regular Du Pont Fire Retardants are recommended.

TO HELP YOU take advantage of this new development, Du Pont technical assistance is readily available. Just clip the coupon for our samples and technical bulletin on Sulfamic Acid.

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Prediction of Pulp Mill Pollution

By

JOHN P. TULLY

Pacific Oceanographic Group, Pacific Biological Station, Nanaimo, B. C.

Abstract

This paper describes procedures for calculating the effects of waste sulphite and sulphate liquors on biochemical oxygen demand in waters of known characteristics. It describes how such calculations were used to predict pollution to be produced by a proposed pulp mill and to provide for controlling such pollution by suitable plant design and operation. The predictions have been subsequently proven by actual operation of a sulphate mill at this location.

Introduction

During the past generation there has been continuous disagreement between industry and fisheries conservationists over the pollution of natural waterways by pulp mill sewage. Both agree that the waste liquors can pollute the waters and kill the fish. Pulp mill owners argue that the loss of a "few fish" is inconsequential compared to the benefits from a large development employing hundreds of men. The conservationists point out that the fisheries are an industry in themselves, comparable in magnitude to the pulp industry.

Regardless of the rights or wrongs in individual cases, it is poor social economy to develop one industry at the expense of another. Such a course leads to litigation, subsidies, restrictions, and other parasitical expenses, which can, and frequently do, absorb the profit margin in desirable industrial development.

Therefore it is the responsibility of scientists and engineers to anticipate the problems, and adjust the undertakings so that each resource may be developed to the highest economic levels without depredations on neighboring industries or persons. With this background the avoidance of pulp mill pollution becomes an economic and social problem, as well as a technical undertaking.

Heretofore, the effect of industrial pollution was not realized until it was accomplished, and was almost invariably followed by attempts at remedial measures which are generally expensive and ineffectual. Recently it has been possible to establish a measure of pollution, and in the case of the pulp industry, to predict the state likely to result from a given development. Obviously it is most efficient to predict the degree of pollution, and adjust the development in the planning stage. Even in the cases where pollution already exists it is advantageous to measure its degree, and be in a position to estimate the corrective measures required.

Fisheries

Salmon, herring, and halibut constitute the principal Canadian fisheries on the Pacific Coast. Halibut being an offshore fishery is not affected by industrial pollution. Herring come to inshore waters to spawn and there is no evidence as yet that they have been adversely affected, but the salmon are very vulnerable.

Salmon spawn in streams, lakes, and rivers where the eggs and young remain for a period of a few months to a year or more. They go to sea, attain maturity, and return to the fresh water to spawn and die. Aside from the radio-active debris from atomic bombs, there are no pollution factors likely to have an economic effect in the open sea. However, pollution or obstruction of fresh waterways can be, and sometimes, is of principal economic importance.

Types of Pulp Mill Locations

In general pulp mills that discharge their waste into large seaways, where infinite dilution of the sewage is quickly attained, are not sources of economic pollution. Such instances are represented by the wood fiber plant on Howe Sound, British Columbia Pulp and Paper mill in Quatsino Sound, and the Powell River development on Georgia Strait.

A second type of economically inconsequential pollution is represented by the pulp mill at Ocean Falls, B. C., where the sewage is discharged into a small inlet that never had a fishery.

The risk of pollution occurs when the pulp mill waste is discharged into a waterway where dilution is limited. Such cases are demonstrated by the developments in Gray's Harbor, and Oakland Bay, Wash.

Theory of Pollution

Regardless of the nature of the pollution, there must be some level at which it can be tolerated by the life in any environment. This implies that there are degrees of pollution, less than the critical level, which are tolerable. Therefore, the degree of pollution (P) may be defined in a completely general sense by

$$(1)\quad P = \frac{\text{Pollution effects}}{\text{Limit of tolerance}}$$

where the effects and limits are expressed in comparable terms. Then the state is tolerable while the degree of pollution is one or less

$$P_{\text{tolerable}} \leq 1$$

It remains to define and evaluate the terms of this equation in any given instance.

In the case of pulp mill pollution, it is the consusus of the literature that the only pollution effect of waste sulphite liquor that is of consequence, at dilutions of 500 parts per million or greater, is the biochemical oxygen demand (B.O.D.). Further, the maximum tolerable oxygen depletion is 60 percent of the oxygen solubility (DO). Then the limiting tolerable pollution would occur when

$$(2)\quad P = \frac{\text{B.O.D.}}{0.6(\text{DO})} = 1$$

in a volume that was initially saturated with dissolved oxygen.

Table 1

Production Characteristics of the Proposed Pulp Mill

Rate of production (tons of pulp per day)	135
Waste sulphite liquor (digester liquor) (gallons U.S. per day)	308,000
(cu. ft. per day)	41,200
Mean rate of discharge (c.f.s.)	0.477
Density of digester liquor	1.046
Percent solids in solution	11-12
Wash water (gallons U.S. per day)	5,650,000
(cu. ft. per day)	755,000
Miscellaneous water from the mill (U.S. gal. per day)	1,500,000
(cu. ft. per day)	200,200
Total volume of sulphite sewage (digester liquor + wash water) (U.S. gal. per day)	5,958,000
(cu. ft. per day)	784,000
Steady rate of discharge (c.f.s.)	9.1
Percent concentration of digester liquor in sewage (solids)	0.61
Density of sewage (Townsend) (equivalent to sea water of 1.7‰ Cl)	1.0062

The application of this equation may be simply illustrated in the prediction of the pollution likely to occur from a standard 135 ton sulphite pulp mill, discharging untreated waste sulphite liquor, along with all other mill water, into an adjacent river. The pertinent characteristics of such a mill are given in Table 1.

Biochemical Oxygen Demand, B.O.D.

Fig. 1 shows the calculated demand of waste sulphite liquor at a concentration of one part per million (0.01 of the demand at 100 p.p.m.) (B.O.D.)*

Presented at the 1949 annual meeting of the Forest Products Research Society, Grand Rapids, Mich.

derived from a study of the literature pertaining to pulp mills in the Northwest.

Calculated Oxygen Demand of Waste Sulphite Liquor

(Concentration 1PPM)

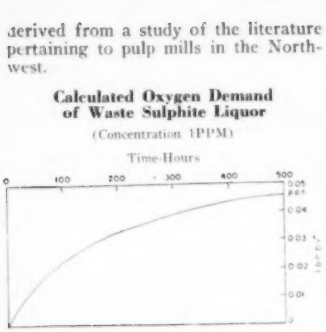


Figure 1. Calculated oxygen demand of waste sulphite liquor at a concentration of one part per million (0.01 of the demand at 100 parts per million). Biochemical oxygen demand (B.O.D.)* derived from a study of the literature pertaining to pulp mills in the Northwest.

Concentration of Waste Sulphite Liquor

If the waste sulphite liquor is mixed with all mill water and discharged at approximately the density of the river water, it will normally be uniformly distributed in the river water within a day's flow downstream. Therefore, the concentration of waste sulphite liquor (N) may be estimated as the ratio of the mill discharge of waste sulphite liquor (Q_S) to the river discharge (Q)

$$(3) \qquad N = \frac{Q_S}{Q} \times 10^6 \text{ p.p.m.}$$

Then the oxygen demand is

$$(4) \qquad B.O.D. = N(B.O.D.)^*$$

Oxygen Supply

In a natural waterway the dissolved oxygen concentration is usually less than the solubility. This may be expressed as

$$(1-d)\ (DO)$$

where d is the deficiency, or departure from saturation (DO).

The deficiency must be counted as part of the oxygen demand, since it is not available to the fish. Therefore, the equation of pollution becomes

$$(5) \qquad P = \frac{N\ (B.O.D.)^*}{(0.6-d)\ (DO)}$$

The solubility of oxygen (DO) in fresh and sea water is given in Table II. The evaluation of the oxygen deficiency (d) implies that the normal concentration of oxygen in the unpolluted waterway is known, or can be estimated.

Table II

Solubility of Oxygen in Fresh and Sea Water

(Whipple and Whipple, J.A.C.S. XXXIII, 1911)

Temperature °C	Chlorinity ($Cl^0/_{00}$) of Sea Water				
	0 Fresh	4	8	12	16	20
	Oxygen solubility (p.p.m.)					
0	14.62	13.96	13.30	12.64	11.98	11.32
4	13.13	12.55	11.98	11.40	10.83	10.25
8	11.87	11.37	10.86	10.36	9.86	9.36
12	10.83	10.39	9.94	9.50	9.06	8.62
16	9.95	9.56	9.16	8.77	8.38	7.99
20	9.17	8.82	8.47	8.12	7.77	7.42
24	8.53	8.20	7.87	7.54	7.21	6.87
28	7.92	7.61	7.30	6.99	6.68	6.37

Age of Waste Sulphite Liquor

As shown in Fig. 1, time is required for the oxygen demand to develop. During this time the effluent is presumably being carried away from the pulp mill sewer by the circulation in the natural waterway. Consequently, the greatest depletion of oxygen must occur at some point downstream from the mill site, at the distance associated with four or five days' flow. Therefore, it is necessary to evaluate the pollution at intervals from the sewer outfall, to determine the position, and degree of the maximum pollution (P_{max}).

Estimation of Pollution in a River

Example 1: Consider the 135 ton sulphite mill (Table I) wasting its effluent in a river, whose minimum flow is 2270 cubic feet per second at a distance corresponding to 50 hours' flow from the millsite.

Then in Equations 3 and 4

$$N = \frac{0.477}{2270} \times 10^6 = 210 \text{ p.p.m.}$$

(B.O.D.)* at 50 hours = 0.0153 p.p.m (Fig. 1)

B.O.D. = $210 \times 0.0153 = 3.21$ p.p.m.

The normal oxygen concentration is 9.2 p.p.m. at a temperature of 59°F. when the solubility would be 10.1 p.p.m. (Table II). Then degree of saturation is

$$\frac{9.2}{10.1} = 0.9$$

wherefore the deficiency

$$d = 1.0 - 0.9 = 0.1$$

from which the oxygen supply is

$$(0.6-0.1)\ (10.1) = 5.05$$

and Equation 5 becomes

$$P = \frac{3.21}{5.05} = 0.64$$

which is the degree of pollution to be anticipated at the specified discharge of the river, and distance from the millsite.

Size of River Required

Example 2: It is to be remarked that the unit (B.O.D.)* increases to a maximum of 0.0448 p.p.m. in about 500 hours from which it is possible to predict the minimum flow which would tolerate the pollution from the proposed mill.

Substituting the oxygen supply (5.05) for B.O.D. and setting (B.O.D.)* = 0.0448 in Equation 4

$$N = \frac{5.05}{0.0448} = 113$$

and setting this value of N in Equation 3, the critical level of river discharge is

$$Q = \frac{0.477}{133} \times 10^6 = 4240 \text{ c.f.s.}$$

River Increases Downstream

Example 3: The discharge of most rivers increases downstream as the drainage area increases; wherefore the concentration of waste sulphite liquor decreases while the oxygen demand increases. Consequently, a mill may be established on a river whose flow is less than the critical level at the millsite, if its discharge increases downstream sufficiently to provide an oxygen supply equal to the demand. Such an instance is illustrated in Fig. 2.

Fig. 2,a shows the plan of a hypothetical river whose discharge is assumed to be monitored at five stations covering the distance traveled by the water in the course of 20 days.

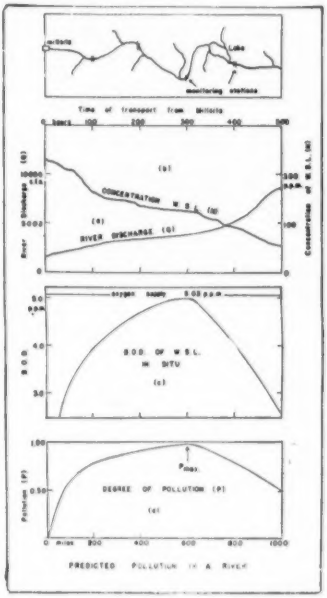


Figure 2. Relationship between waste sulphite liquor concentration, river discharge, biochemical oxygen demand, and degree of pollution for a hypothetical mill and river.

Fig. 2,b shows the river discharge referred to the left hand scale. This curve is interpolated between the observed points with reference to the approximate size of the tributory streams at their point of entry. The corresponding concentration of waste sulphite liquor is shown in the second curve (Fig. 2,b) referred to the right hand margin.

The biochemical oxygen demand, computed by Equation 5, is indexed to the left hand scale in Fig. 2,c and the observed oxygen supply (0.6 — d) (DO) is referred to the right hand scale.

The degree of pollution (P) is shown in Fig. 2,d.

Evidently the degree of pollution will increase downstream to a maximum (P_{max}) which must not exceed 1.0 if the pollution is to be tolerable.

It remains to solve the relation of P_{max} to river level between the anticipated limits of discharge. Such a solution is shown in Fig. 3, where it

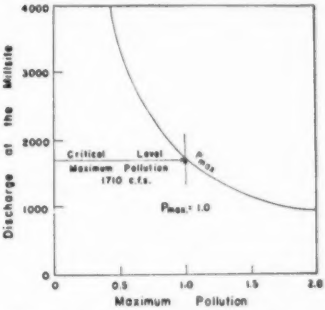


Figure 3. Relation of the degree of maximum pollution to the discharge of the river for the hypothetical mill and river shown in Fig. 2.

is indicated that the limiting tolerable degree of pollution may be expected when the river discharge is 1710 cubic feet per second at the millsite. The probability of this condition occurring may then be determined from run-off records.

Alberni Inlet

A more complex situation arises if the pulp mill discharges its effluent into a confined seaway such as an inlet or bay. The water moves back and forth with the tide, progressing slowly seaward. The volume of water adjacent to the mill sewer is usually larger than most rivers, but the rate of flow is very much smaller, so that the effluent tends to accumulate in the vicinity. This may cause serious pollution if the millsite is associated with a commercial fishery.

Solution of this problem may be illustrated in the case of a proposed 135 ton sulphite pulp mill (Table I) which was to discharge untreated waste into the head of Alberni Inlet, on the West coast of Vancouver Island.

This inlet (Fig. 4) is a long narrow arm of the sea, having the typical fiord structure of the Canadian and Alaskan inlets. Over most of its length it is a two dimensional estuary system. Fresh water is continually being added to the surface from the Somass river (153 to 38,000 c.f.s.) at the head. The fresh water moves seaward, mixing with the underlying sea water enroute so that there is a longitudinal salinity gradient from head to mouth. In the region of the head of the inlet, the stream from the river diverges until it occupies the whole width, after which the transverse salinity gradient vanishes.

In vertical section (Fig. 5,a) the longitudinal salinity gradient is restricted to an upper zone defined by a point of inflexion in the salinity depth relation (Fig. 5,b). Below this inflexion there is a *middle zone* in which there is a little or no longitudinal salinity gradient.

Without going into the exhaustive analysis given in the references[1,2,3] it is concluded that the fresh water moves seaward in the *upper zone* due to the isostatic head between the fresh water at the river mouth, and the saline water in the sea. During this progress the fresh water is mixed with sea water from the underlying *middle zone*, due to turbulence resulting from tidal velocities. Sea water enters the inlet only in the middle zone during the flooding tide, because it is more dense than the upper zone water, but leaves the inlet through both upper and middle zone, during the ebb tide phase. Consequently the movement is predominantly seaward in the upper zone, and towards the head in the middle zone.

All fresh water leaves the inlet by way of the upper zone, because any fresh water transferred downwards moves toward the head, adjacent to the boundary between the zones, and is preferentially subject to further mixing. Sea water transferred upwards is carried seaward to be mixed again.

The middle zone etxends to the depth of the threshold (Figs. 4 and 5,a) which acts as a weir protecting the deep zone from all current producing forces, except frictional transfer from the middle zone. There is little or no circulation in this deep zone.

It follows that, if the waste sulphite liquor were mixed with all other waste mill water to a density approximately that of fresh water, and was discharged into the surface of the inlet, it would remain in the upper zone and move persistently seaward, leaving the deeper waters unpolluted.

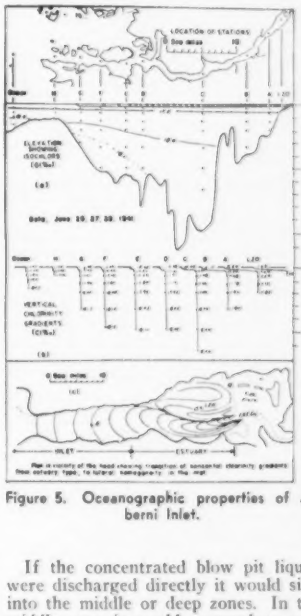


Figure 5. Oceanographic properties of Alberni Inlet.

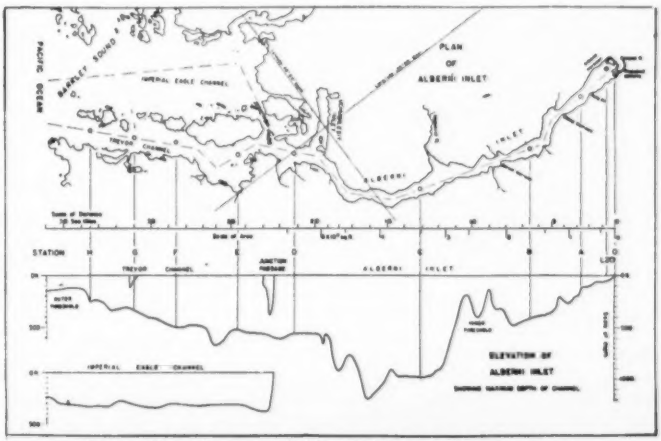


Fig. 4.—Map and elevation of Alberni Inlet showing depth of channel.

If the concentrated blow pit liquor were discharged directly it would sink into the middle or deep zones. In the middle zone it would accumulate near the head until it was mixed into the upper zone. In the deep zone it would accumulate indefinitely but would be transferred upwards by diffusion, and eventually pollute all zones of the linet. In the latter cases there would be no control of the accumulated effluent and if the pollution became intolerable, it would constitute a disaster that would destroy the fishery.

[1] Tully, J. P., Oceanography of Alberni Inlet, Bul. Fish. Res. Bd., Ottawa, Canada.
[2] ———, Prediction of Pulp Mill Pollution in Alberni Inlet, Bul. Fish. Res. Bd., Ottawa, Canada.
[3] ———, Hollister, H. J., Fjarlie, R. L. I., and Anderson, W., A Hydraulic Model of Alberni Harbor, Bul. Fish. Res. Bd., Ottawa, Canada.

It was concluded that the first possibility should be accepted and the effluent confined to the upper zone, so that it would not accumulate. Then if the limit of tolerance were attained the pollutant could be controlled at the source, and in any case there would be unpolluted avenue for fish migration below the upper zone. This implied that the waste sulphite liquor should be mixed with all other mill water, and be discharged at the surface of the inlet.

Equation 5 is not directly applicable to a seaway because the transport is complicated by the reversing motion of the tide, and the effluent is diluted by sea water, as well as fresh. However it is evident that from any limited region a proportoin (r) of the water is displaced seaward by a similar volume entering the region, during a tidal period (T = 24 hours 50 minutes).

Then during a tidal period only a specific part of the oxygen demand $(B.O.D.)_T$ can be satisfied, and the dissolved oxygen available to supply this demand must be contained in the new water added to the region in the displacement process, hence

$$(6) \qquad P = \frac{(B.O.D.)_T}{(0.6 - d)\ (DO)\ r}$$

This equation was solved in Alberni inlet within very reasonable limits of accuracy.

Specific Biochemical Oxygen Demand

It is assumed that the limited region of the inlet is chosen such that the sewage is mixed to homogeneity before displacement occurs. Then the total concentration (N) of mill effluent in the region contains proportions of all ages. That is, at the end of the first tidal period there will be a concentration (Nr) of age 1 tide periods, $Nr(1-r)$ of age 2 periods and $Nr\ (1-r)^{n-1}$ of age n tide periods. Further, the specific bichemical oxygen demand during the present tide period, of the portion of age 1 period is $(\Delta B.O.D.)_1$, the demand of the portion of age 2 periods is $(\Delta B.O.D.)_2$, etc., so that the total oxygen demand in one tidal period (B.O.D.) is the sum of all these quantities.

$$[B.O.D.] = \sum_{1}^{n} [Nr(1-r)^n (\Delta B.O.D.)_n]$$

which is representative if the region is small.

If the region is large enough to require an appreciable time for the transport of effluent through it, it must be assumed that the B.O.D. of the total discharge during the time of transit must be satisfied. Therefore a term is added,

$$Nr[B.O.D.]_0^m$$

where m signifies the time of transport in tidal periods. It may be recognized that on the average the effluent moves forward such that the number of tidal periods required to traverse the region is

$$m = T\frac{AZ}{AZr} = \frac{T}{r}$$

where A is the area of the region (Table III), and Z is the mean depth

Table III

Characteristics of Alberni Inlet

	Interval			
	O-A	O-B	O-C	O-D
Length (feet).....	15,600	37,980	79,580	128,780
Area (sq. feet) x 10^{-7}..	8.00	16.30	34.80	64.90
Run-off Ratio (F).....	1.00	1.173	1.55	1.95

of the upper zone (Fig. 5) in which the effluent is contained. This value of m may be substituted above.

Then a term describing the partial demand during the time of transport m = T/r is to be subtracted.

$$\sum_{1}^{T/r} [Nr(1-r)^n (\Delta B.O.D.)n]$$

because the oxygen demand in this time interval is represented by the second term.

Therefore the specific oxygen demand, to be supplied by the water entering the region in each tidal period is (7)

$$\frac{(B.O.D.)_T}{Nr} = (B.O.D.)_0^{T/r} + \sum_{1}^{T/r} [(1-r)^n (\Delta B.O.D.)n] - \sum_{1}^{T/r} [(1-r)^n (\Delta B.O.D.)n]$$

The solution of Equation 7, based on the rate of oxygen demand of Fig. 1, is shown in Fig. 6.

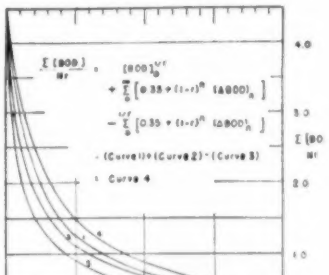


Figure 6. Oxygen demand of waste sulphite liquor during one tidal cycle in a region of displacement (r).

Substituting this value in Equation 6 the equation of pollution becomes

$$(8) \quad P = \frac{(B.O.D.)_T}{Nr} \cdot \frac{N}{(0.6 - d)\ (DO)}$$

which represents the average degree of pollution at the downstream limit of the region from which the effluent is about to be displaced.

Concentration (N) of Waste Sulphite Liquor

As shown in Equation 3 the concentration of waste sulphite liquor in the fresh water from the Somass river, may be expressed by the ratio of the discharge rates. Then the concentration of the river water in the inlet may be determined from the degree of dilution of the sea water.

Undiluted sea water in this location was defined by the salinity (Sb) occurring at 33 feet depth. It was observed that this base value was constant at this depth and represented the salinity of the sea water entering the inlet during the flood tide. The ratio of the observed salinity (So) at any point, to the base value (Sb) represents the proportion of sea water present, consequently the proportion of fresh water in the sample is

$$C = 1 - \frac{So}{Sb}$$

The ratio of land drainage in the continuing intervals (O-A, O-B etc.) to the discharge of the Somass river was evaluated in a factor F (Table 3). Then the concentration of water from this river at any station was

$$(9) \qquad \frac{C}{F} = 1 - \frac{So}{Sb}.$$

and the concentration of effluent is

$$(10) \qquad N = \frac{Qs}{Q} \cdot \frac{\bar{C}}{F}$$

where $\bar{C}$ is the mean proportion of fresh water in the limited region (O-A, O-B, etc.)

Displacement

It may be observed that mean sea level is constant, from which it is concluded that the inflow of water from all sources equals the outflow to the sea during a tidal day. Further, the distribution of salinity is recurrent, within small limits, at similar stages of the tide period, while the rate of land drainage, and the wind remains constant. Therefore it is concluded that a proportion of the fresh and sea water is displaced from the upper zone of the inlet to the sea in each tide cycle, by a like amount of fresh and sea water from their several sources. Further the process must apply quantitatively to any region of the inlet, otherwise the salinity structure would not remain constant.

It follows that the fresh water must move through the upper zone at the rate of land drainage, and the proportion (r) of water displaced seaward from any region of the inlet between the head (O) and any arbitrarily chosen cross section (A, B, C, etc.) may be evaluated as the ratio of the fresh water contributed by land drainage during a tide period ($\sum_{0}^{T} Q$) to the volume of fresh water contained in the upper zone (AZC)

$$r = \frac{\overset{T}{\Sigma Q}}{AZ\bar{c}} \qquad (11)$$

where A is the area of the region (Table III) and Z is the depth of the upper zone (Fig. 7).

Dissolved Oxygen Supply

During the critical period of the year (August, September) the dissolved oxygen concentration could be conservatively represented as 8.5 parts per million, which is about 0.9 of saturation. Then the available oxygen supply becomes

$$(0.6 - 0.1)\ (9.0) = 4.7 \text{ p.p.m.}$$

Characteristics of Alberni Inlet

It is evident from this reasoning that the displacement (r), the proportion of fresh water (C) the depth of the upper zone (Z) and the concentration (N) of waste sulphite liquor are all functions of the rate of land drainage in the particular situation. Oceanographic observations were made regularly at 5 representative stations (Fig. 4) from the time of maximum river discharge in May to minimum in September. From these data the structure and mechanism of the seaway was defined in terms of the discharge of the principal river (Ref. 1), as shown in Fig. 7.

It was observed that the relations were subject to the probability of there being a freshet which accelerated the displacement, and of adverse winds which retarded displacement.

The Degree of Pollution

From these data the degree of pollution at successive intervals (A, B, C, D) was computed in relation to river discharge as shown in Fig. 8.

Discussion

It was predicted that pollution would increase to seaward, attaining a maximum in about three miles from the millsite. In this interval the rate of oxygen demand (ΔB.O.D.) exceeds the rate of supply (0.5 (DO)r). Further to seaward the pollution would decrease with the rate of demand, and increase of oxygen supply.

The relation of maximum pollution to river discharge, shown in Fig. 8 indicates that, the critical relation, $P_{max} = 1$, would be reached when the Somass river discharge was between 1600 and 1800 c.f.s. When the river fell below this level, as it does every summer (Fig. 9), the effluent would utilize all or part of the oxygen required for the fish. If the mill were located half way down the inlet, at Nahmint (Fig. 4) critical pollution would occur when the Somass river discharge was less than 500 cubic feet per second, and it would be necessary to limit operation for about one month every year.

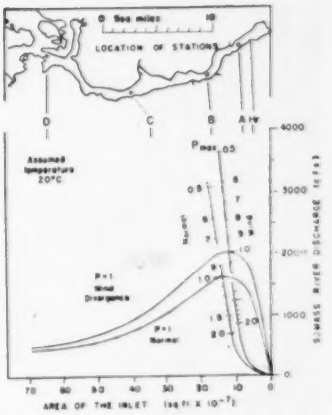


Figure 8. Calculated Alberni Inlet pollution from proposed sulphite pulp mill.

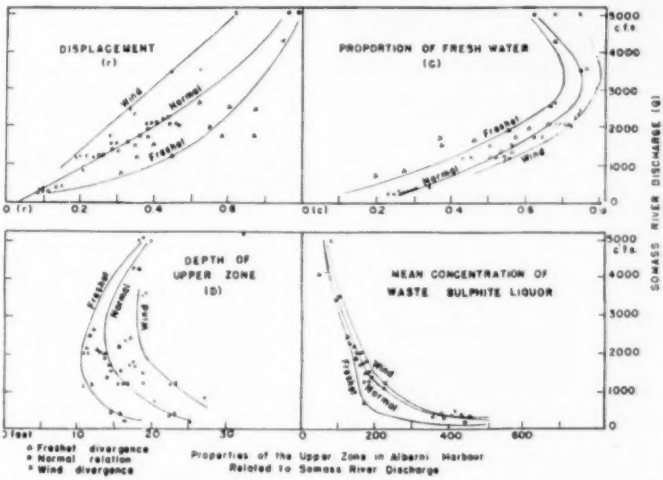


Figure 7. Properties of the upper zone in Alberni Harbor related to Somass River discharge.

It was shown that the restriction in operation could be obviated by storing water in the lakes at the head of the river, and releasing it so as to maintain land drainage above the critical level. Conversely the concentrated blow pit liquor could be stored in ponds during the summer, and released in the winter when the river was high.

The third possibility, proposed by the industry, was to build a sulphate mill from which the discharge of waste liquor would be so small that its oxygen demand could be tolerated at the lowest river levels, as shown in Table 4.

This sulphate mill (Fig. 10) has been built. The waste liquor is mixed with all other mill water and discharged into a pond, at the head of the inlet, where the waste fibers settle out. The overflow from this pond runs into Alberni harbor a short distance from the mouth of the Somass river.

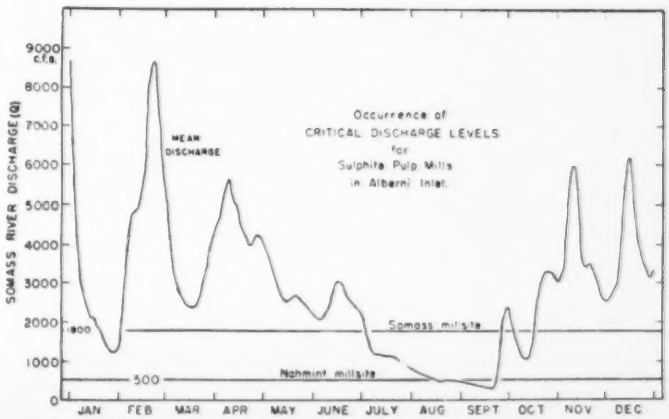


Figure 9. Occurrence of critical discharge levels for sulphite pulp mills in Alberni Inlet.

Figure 10. View of Bloedel, Stewart and Welch pulp mill at the head of Alberni Inlet, showing: A, pulp mill; B, sewer outlet and settling pond; D, overflow to log pond; and G, Somass River mouth.

Investigations to date have shown that the degree of pollution is within the predicted limits (Table IV). No deleterious pollution is anticipated.

Table IV

Estimated Maximum Pollution in The Upper Zone of Alberni Inlet During The Low River Levels, Due to Sewage from the Existing (1948) Sulphate Pulp Mill

Discharge Somass R. (c.f.s.)	Concentration of sewage upper zone (p.p.m.)	Mean oxygen demand in upper zone (p.p.m.)	Dissolved oxygen concentration (p.p.m.)	Estimated degree of pollution (P max.)[3]
153[1]	15,000	2.1	8.5	0.60
200	12,000	1.7	8.5	0.48
300	9,400	1.3	8.5	0.37
500	7,000	1.0[2]	8.5	0.28
700	6,200	0.9[2]	8.5	0.25
1000	5,100	0.7[2]	8.5	0.20

[1] 153 cubic feet per second is the minimum recorded discharge of the Somass river.
[2] These small oxygen demands are within the natural limits of variation of dissolved oxygen, and would not be noticed in test of the water in Alberni Harbor.
[3] The degree of pollution (P) is the ratio of the oxygen demand of the pulp mill sewage to the dissolved oxygen available, in excess of the amount required for the fish. When the maximum pollution occurring anywhere in the inlet is 100 per cent or less, there will be 5 parts per million, or more, of dissolved oxygen everywhere in the upper zone.

This solution does not take into account the natural aeration of the waters, which would occur during the flow. Such a process is imponderable, and should be regarded as a safety factor in the estimate.

No account has been taken of the problem arising from settling pulp fibers because the bottom of Alberni Inlet does not contribute to a commercial fishery. However the pond shown in Fig. 10 effectively removes the fibers, and could be adapted to other undertakings, where fibers are deleterious.

This solution proves a criterion for the limit of pulp mill development in Alberni Inlet. It is shown (Table 4) that 60 percent of the available oxygen will be required during the period of extreme minimum river flow. Consequently the expansion of this mill, or the establishment of another mill is restricted to the utilization of the remaining 40 percent.

At the time the problem was proposed, it was suggested that the pulp mill was of greater industrial value than the fishery of Alberni Inlet and should be permitted, even if the fishery were lost. Although this may be true, acceptance of the proposition would have provided precedent for unrestricted pollution in many other coastal seaways, which would probably be disastrous to the fisheries. The precedent illustrated here, of predicting the probable state of pollution and adapting the pulp mill to the situation may well ensure the survival of the salmon fishery.

Besides this, the present mill has all the assurance possible that it will not be subject to the litigation, retsrictions, and subsidies which could have resulted if the originally proposed sulphite mill had been built.

It is pleasant to acknowledge the interest, and frequent assistance of Bloedel, Stewart, and Welch Ltd., while this research was in progress, to remark on their efficient implementation of the results, and their continued willingness to make adjustments as required.

In a situation where fish mortality indicates that pollution is excessive, it is advantageous to assess the degree, in order to estimate the extent and nature of rcorrective measures that are required. In such a case the dissolved oxygen supply may be estimated at some point in the unpolluted portion of the system which may be assumed to be representative of the polluted reach, and substituted in Equation 5 or 8. The subsequent development of the prediction is identical with that illustrated.

The applicaion of these principles to other forms of pollution is obvious. A measure of the principle pollution effect, and the limit of tolerance, in similar terms is substituted in Equation 1, and a solution developed similarly to these examples.

Conclusion

This research has established a quantitative measure of pollution, defined the tolerable limits, and shown how they may be evaluated either before or after pollution occurs in an inlet or river. It has created a precedent for the prediction of the probable degree of pollution from an industrial development, which in turn permitted adjustments to be made before the fishery was damaged.

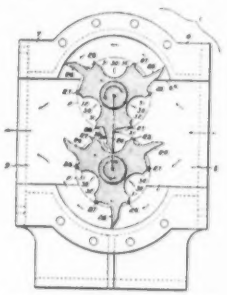
The research is reviewed in detail in three papers which are to be published as a Bulletin of the Fisheries Research Board of Canada, Ottawa.

PATENT ABSTRACTS

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information to our readers are included herein.***

2,460,278—Rotary Pump for Thick Fibrous Suspensions. Ernest P. Cook, Berlin, N. H., assignor to Improved Paper Machinery Corporation, Nashua, N. H., a corporation of Maine. Filed Feb. 4, 1944—Issued Feb. 1, 1949.

A rotary-piston pump characterized by a controlled displacement, comprising, in combina-

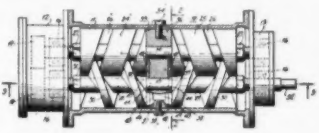


tion: a casing defining a rotor chamber; a plurality of interacting rotors therein on parallel axes transverse to the path of flow; each rotor having a circumferential series of alternated projective elements and valley elements; each projective element having a central radial thrust flank, an angular rearwardly relieved tip, and each valley element including rounded bottom and flaring side walls; said projective elements adapted for rotative passage through the valley elements with the projectiv tips in a clearant relation and angular presentation to the valley

walls selected to afford during each such passage an initial shearing and subsequent scuffing separant action upon any adjacent fibrous mass of a fibre suspension to be pumped and simultaneously throughout said actions to effect a single lineal seal at the tip advancing through a valley.

2,460,310—Screw Pump. Gilbert Rathman, Union, N. J., assignor to Roots-Connersville Blower Corporation, Connersville, Ind. Filed Nov. 20, 1943—Issued Feb. 1, 1949.

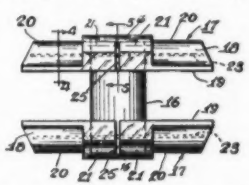
In a device of the class described, the combination of a casing provided with an inlet port



and an outlet port, a pair of intermashing screws fitted for free rotary movement in the casing and coacting to advance a fluid from the inlet port through the casing and out through the outlet port, means for driving one screw from the other at a one-to-one ratio, a partition fixed in the casing against movement axially of the screws and against which the discharge ends of both screws abut, the opposite or intake ends of the screws being wide open to the inlet port, said partition forming a barrier to close completely the discharge end of one of the screws and means controlled by the rotation of the other screw for opening communication between the discharge end of the said other screw and the outlet port once for each rotation of the screws.

2,460,361—Slipper Bearing. John A. Petho, Perkiomenville, Pa., assignor to Continental-Diamond Fibre Company, Newark, Del. Filed Sept. 22, 1943—Issued Feb. 1, 1949.

A slipper bearing composed of a cellulosic base impregnated with a heat-hardening resin-



ous material, said bearing being chordally segmental in cross section and having a unitary flat flexible metal plate substantially co-extensive therewith embedded therein parallel to the flat face thereof, the bearing being transversely slotted to sever the same at opposite faces of said plate.

2,460,372—Manufacture of Artificial Protein Filaments. Robin H. K. Thom-Kilwinning, Scotland, assignor to Imperial Chemical Industries Limited, a corporation of Great Britain. Filed Aug. 21, 1944—Issued Feb. 1, 1949.

The process for obtaining an improved, crimped, protein filament, which comprises wet-stretching an insolubilized filament previously formed by wet-spinning a protein solution of the group consisting of vegetable globulin solutions and casein solutions, contacting the taut filament

with formaldehyde, drying the taut filament at a temperature of at least 80° C., releasing the tension on the filament and thereafter contacting the filament in relaxed condition with boiling water.

2,460,400—Methods for the Treatment of Regenerated Cellulose Thread. Carl Schlatter, Wilmington, Del., and Carl V. Holmberg, Crossett, Ark., assignors to American Viscose Corporation, Wilmington, Del. Filed July 13, 1944—Issued Feb. 1, 1949.

In the method of manufacturing artificial filaments of regenerated cellulose from viscose comprising spinning the filament-forming material into an aqueous coagulating medium and subjecting the filaments to aqueous after-treatment, including final washing, the step of continuously over a predetermined interval of time treating the filaments while still wet from the washing step and before any prior drying thereof, with a solution comprising a volatile hydrophobic hydrocarbon solvent and from about 1 to 10% of an organic compound capable of withdrawing water from the filamentary material and blending the withdrawn water with the hydrocarbon solvent into a substantially single phase system, said organic compound being soluble in the hydrocarbon solvent, containing at least one hydrophobic group and at least one hydrophilic group, and comprising a substance selected from the group consisting of partial esters of polyhydric alcohols with fatty acids having from 12 to 18 carbon atoms, and ethylene oxide condensates of such esters containing from 6 to 20 ethylene oxide units, such treatment being performed at a temperature below the boiling points of water and the solvent under the conditions of application, and continuously removing the resulting blended system from the filamentary material thereby leaving the material in a predetermined states of dryness.

2,460,439—Benzoyl Peroxide Bleaching Composition. Robert S. Whiteside, Scarsdale, N. Y., and Chester H. Allen, Cincinnati, Ohio, assignors, by mesne assignments, to Winthrop-Stearns, Inc., New York, N. Y., a corporation of Delaware. Filed July 16, 1946—Issued Feb. 1, 1949.

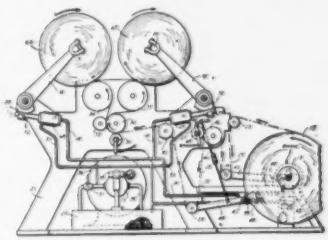
A benzoyl peroxide bleaching composition comprising a finely divided intimate admixture of inert materials containing up to about 30% of benzoyl peroxide, a major portion of said inert materials being dead-burnt anhydrous calcium sulfate.

2,460,692—Polymerization of Resin Oils with Mixed Clay and Organic Acid Catalyst. David F. Gould, Riverton, N. J., assignor to Allied Chemical & Dye Corporation, New York, N. Y. Filed June 24, 1943—Issued Feb. 1, 1949.

A process for producing resins from resin oils selected from the group consisting of oils obtained from coal tar, water-gas tar, oil-gas tar, drip oil, coke-oven distillates and cracked and reformed petroleum distillates, the polymerizable constituents of which consist predominantly of at least one of the compounds selected from the group consisting of coumarine, indene, styrene, and their homologs, which comprises contacting the oil with an effective amount up to 15% of an unactivated adsorbent clay, containing between 12% and 27% alumina and between 54% and 63% silica, and an effective amount up to 4% of an acid selected from the group consisting of formic and oxalic acids based on the weight of the oil at a temperature between 80° and 120° C.

2,460,694—Web Tensioning and Pressure Mechanism. Henry L. Haswell, Brevard, N. C., assignor, by mesne assignments, to Ecusta Paper Corporation, Pisgah Forest, N. C., a corporation of Delaware. Filed Aug. 8, 1945—Issued Feb. 1, 1949.

In a slitting or rewinding machine having a supply roll and at least one rewind roll and a winding drum to drive said roll, means for



passing a continuous web from the supply roll and between the drums and said rewind roll, the combination of hydraulically controlled pressure mechanism for regulating the tension of the web running from the supply roll and for maintaining constant pressure between the rewind roll and said drum, the rewinding roll resting upon the winding drum and being maintained in positive pressure contact therewith by said hydraulically controlled mechanism, the pressure control mechanisms for regulating the tension of the web and for maintaining the pressure on the rewind roll being interconnected as component parts of a single hydraulic system.

2,460,777—Waterproofing Cellulosic Material with Higher Aliphatic Acyl Peroxides. Warren B. Warden, Bradford, Pa., assignor to Peter J. Gaylor, Newark, N. J. Filed Feb. 18, 1946—Issued Feb. 1, 1949.

A method for waterproofing solid cellulosic materials, comprising treating said materials with an organic peroxide having an aliphatic acyl group containing 10 to 20 carbon atoms dissolved in an inert solvent, substantially removing the solvent, and heating the thus treated material at least to the decomposition temperature of the peroxide.

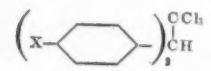
2,460,787—Felt Base Material for Adhesive Attachment to Surfaces and Coating Composition for Same. Ralph F. Seedorf, Cincinnati, Ohio, assignor to Carthage Mills, Inc., Cincinnati, Ohio. Filed April 30, 1945—Issued Feb. 1, 1949.

A felt base material prepared for adhesive union with a support and comprising a fibrous sheet saturated with bitumen and bearing upon one surface a coating comprising binder components one of which is water insoluble, miscible with said bitumen and firmly bonded to the bitumen saturant in said base, and the other of which is water soluble, the total weight of said binder components being substantially between one-sixth and one-eighth of the dry weight of

said coating, the first mentioned binder component being substantially one-fifth of the total weight of said binder components and said second mentioned binder component being substantially four-fifths of the total weight of said binder components whereby the water permeable character of said coating is preserved, said coating also containing an inert filler to increase its porosity, said first mentioned binder component being a material chosen from the group consisting of rosin and tall oil and said second mentioned binder component being a water soluble soap of a material of said group.

2,460,376—Plasticized Lower Fatty Acid Ester of Cellulose. Amerigo F. Caprio, Madison, and William Horback, Newark, N. J., assignors to Celanese Corporation of America, a corporation of Delaware. Filed Oct. 2, 1945—Issued Feb. 1, 1949.

A composition of matter consisting essentially of a lower fatty acid ester of cellulose and



having incorporated therein as a plasticizer and in an amount of from 10 to 30% based on the weight of said ester a compound of the following formula wherein X is a halogen.

2,460,365—Production of Insoluble Sulfur. Alvin Schallis, Jersey City, N. J., assignor to Stauffer Chemical Company, a corporation of California. Filed September 29, 1945. Issued Feb. 1, 1949.

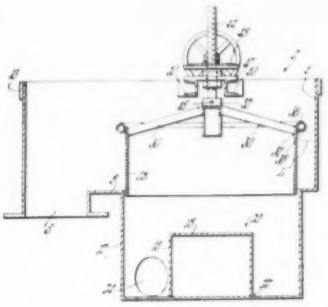
A process for reducing the rate of reversion of that form of sulphur which is insoluble in carbon disulphide to that form which is soluble in carbon disulphide comprising incorporating, in preformed sulphur containing at least a third by weight of said insoluble sulphur, less than about 1% of a halogen on the weight of the sulphur.

2,460,516—Ion-Exchange Resin. Enrique L. Lucaces, Dalton, Ohio, assignor, by mesne assignments, to The Commonwealth Engineering Company of Ohio, Dayton, Ohio. Filed October 20, 1943. Issued Feb. 1, 1949.

The method of making an ion exchange mass comprising a porous inert inorganic adsorbent base of large inner surface area for a given mass and a synthetic ion exchange resin consisting of phenol formaldehyde condensation product over said surface area as a thin film, which consists in adding 50 parts by weight of phenol to 75 parts by weight of porous adsorbent material consisting of discrete granules of large inner surface area, adding to the resulting mixture 25 parts by weight of formaldehyde (100% basis), and heating the mixture at a temperature of from 400° to 500° F. for time sufficient to complete the reaction.

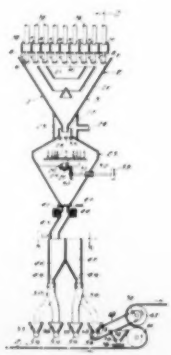
2,460,626—Mixing Box. George A. Engert, Westfield, Mass., assignor to Cheney Bigelow Wire Works, Springfield, Mass. Filed July 26, 1946. Issued Feb. 1, 1949.

A mixing box construction comprising in combination, a horizontal lower wall and a continuous vertical side wall extending upwardly therefrom and forming therewith a chamber, said side wall at one side of the chamber arranged in the form of a portion of a circle of certain radius and at an opposite side thereof in the form of a portion of a circle of relatively shorter radius providing a main portion and an outlet portion of said chamber, said lower wall provided with a sump opening and an outlet opening and disposed



in the main and outlet portions of the chamber respectively, a cylindrical side wall extending downwardly from said lower wall around the sump opening therein and a lower wall secured to the lower end of said cylindrical side wall forming therewith a sump below said lower wall, said cylindrical wall of the sump provided with inlet means to admit water and paper stock, a hollow cylindrical gate having a lower portion within said sump and a continuous upper edge adapted for the flow of water and stock from said inlet means upwardly therethrough and over said upper edge and at all sides thereof into said chamber, and said upper edge of the gate provided with an overflow weir extending entirely thereabout, and operating means between upper sides of said gate and side wall for moving said gate up and down relative to said sump, and a dome extending upwardly from the lower wall of the sump having a side wall spaced inwardly from the side wall of said sump and an upper wall disposed above the horizontal plane of said inlet means.

2,460,605—Apparatus for Feeding Flowable Material from a Plurality of Containers. John A. Soissa, Winnetka, Ill., assignor to Certain-teed Products Corporation, Chicago, Ill. Original application May 7, 1941, Serial No. 392,261. Divided and this application August 7, 1944. Issued Feb. 1, 1949.



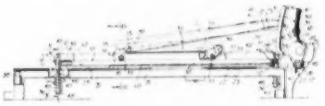
Apparatus for control of flowable comminuted material which comprises a plurality of containers for containing separate supplies of comminuted material and each having an outlet opening in a wall thereof, a plurality of flow governing means respectively associated with said outlet openings respectively to govern flow of comminuted material from said supplies, a hopper providing an accumulating space for accumulation therein of comminuted material discharged from said containers, conduit means for conducting comminuted material discharged from at least two selected ones of said supply containers to said hopper, and control means comprising a yielding part actuated by pressure thereagainst by the accumulated comminuted material in said hopper and connected to the flow governing means of said selective supply containers for successively starting and stopping the flow of the comminuted material from said selected containers for delivery to said hopper of predetermined amounts of each of said comminuted materials.

2,460,627—Process for the Isolation of Soybean Protein. Eero O. Erkko, Wilmington, Del., and Richard T. Trelfa, Kalamazoo, Mich., assignors to Hercules Powder Company, Wilmington, Del., a corporation of Delaware. Filed September 7, 1946. Issued February 1, 1949.

A process for the isolation of protein from soybeans comprising treating oil-free soybean meal with water substantially at the isoelectric point of said protein, separating protein mechanically from the fibrous portion of said meal and subsequently leaching the fibrous portion with an alkaline aqueous protein solvent, thereby extracting additional amounts of protein.

2,460,842—Paper Trimmer—Edward B. Murphy, Linden, N. J., and Samuel Segal, New York, N. Y., assignors to Wilson-Jones Company, Chicago, Ill. Filed April 25, 1945. Issued February 8, 1949.

In combination, a platform for supporting sheet material, balancing spring means above said plat-



form, a compressor normally held by said spring means above and away from said platform for removably clamping said material against said platform, guide means linearly shiftable relative to said platform for movably directing the displacement of said compressor to clamp or unclamp said material, means operative during the clamping relation of said compressor against said material for displacing said guide means bodily in a direction away from said compressor and platform for increasing said clamping relation, and shearing means for severing said material in the clamped relation of the latter.

2,461,007—Process For Refining Turpentine. George H. Splittgerber, Whiting, Ind., assignor to Sinclair Refining Company, New York, N. Y. Filed June 6, 1946. Issued February 8, 1949.

A process which comprises heating turpentine over barium oxide to reflux temperature of the turpentine to remove or inactivate oxygen impurities contained in the turpentine.

PRICES . . . . . .

The prices below reflect general market quotations applying to those standard grades in which the normal volume of business is being done.

NEW YORK

Delivered New York

Standard News, per ton—

Rolls, contract	$100.00/	—
Sheets	115.00/	—

F.o.b. Mill, Varying Freight Allowances

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls	$6.25/	$6.75
No. 1 Wrapping Rolls	7.00/	7.50
Standard Bag	5.75/	6.25

Tissues— per ream 24x36 (480) 10/11 lbs. 2500 lbs. or more

Wh. No. 1 Frd.	$160.00/	—
Wh. No. 1 M. G.	150.00/	—
Wh. No. 1½	150.00/	—
Wh. No. 2	1.17½/	1.20
Kraft Anti-Tar	1.45 /	1.50
Shrd. Wh. No. 1 per lb.	.11½/	—

Toilet— per case of 100 rolls—1 M sheets.

Unbleached 4½x4½	$5.75/	—
Bleached 4½x4½	6.95/	—
Bleached 4½x5	8.80/	—

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½	$5.75/	—
Bleached 4½x4½	6.80/	—

Per Case of 100 rolls—1000 sheets

Facial, 4½ x 5, 2 ply	$8.95/	$9.45

Paper Towels—per case of 3750—Zone 1.

Wh. Jr. M'tif'd 9½x9½	$5.25	
Br. Sr. M'tif'd 10x12	3.60	
Br. Jr. M'tif'd 9½x9¾	3.10	
Br. Jr. Sgl. fold 10x10¾	3.15	
Blchd. 7½ x 11, 24/25 rolls	$3.95/	$6.25

Manila, per cwt.

No. 1 Jute Tag 40 lb., sheets*	$15.05/	$17.50
Reg. Jute M.F. Manila, sheets*	13.50/	15.50
Wrapping Manila	8.75/	10.50
Printing Manila	10.00/	11.00

* Less usual allowance for rolls.

Boards, per ton—

Filled News	$65.00/	$67.50
Plain Chip	65.00/	—
Blchd. Mla. L-d. Chip*	92.50/	—
White Pat. coated*	110.00/	
Kraft Liners 42 lb.	100.00/	
Kraft Corr. .009	105.00/	
Binders Boards	110.00/	116.00

* Base Prices per 10 tons. Less than 10 ton but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

WORLD WOOD PULP MARKETS

Third Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered, with varying freight allowances		On dock Atlantic Ports Full freight allowance		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$65.00/ —	$65.00/ —			
Soda, Bleached	113.00/ —	113.00/ —		Competitive	
Sulphate, Bleached	118.00/126.00	126.50/ —	125.00/128.00		
Sulphate, Unbl'd North'n	— / —	82.50/105.00	94.00/ —	with	
Sulphate, Unbl'd South'n	80.00/ —				
Sulphite Blchd. (S'ftw'd)	118.00/ —	118.00/ —	118.00/ —	Domestic	Competitive
Sulphite, Blchd. (H'dw'd)	113.00/ —				
Sulphite, Unbleached	100.00/ —	100.00/ —	100.00/ —	Grades	
Sulphite, Unbl'd (Glassine)	105.00/ —	105.00/ —	104.00/105.00		

WASTE PAPER MARKET

Prices to Mills. Quotations Nominal
F.O.B. Shipping Point (Per Ton)

	New York July 11	Philadelphia July 12	Boston July 25	Chicago July 7
No. 1 Mixed Paper	$2.00/ $3.00	$3.00/ $4.00	Nominal	$5.00/ —
Boxboard Cuts	2.00/ 3.00	2.00/ 3.00	— / 5.00	8.00/ —
Mill Wrappers	14.00/ 15.00	8.00/ 10.00	— / 9.00	7.00/ —
No. 1 News	7.00/ 8.00	5.00/ 7.00	— / 9.00	11.00/ —
Over-issue News	15.00/ 16.00	9.00/ 11.00	8.00/ 10.50	14.00/ —
Corrugated Containers	9.00/ 11.00	10.00/ 11.00	8.00/ 10.50	12.00/ —
New Corrugated Cuts	13.00/ 15.00	18.00/ 20.00	16.00/ —	15.00/ —
Double Kraft Ld. Corr. Cuts	30.00/ —	25.00/ 30.00	25.00/ —	25.00/ 30.00
Used Kraft Bags	25.00/ —	15.00/ 17.00	25.00/ 30.00	15.00/ —
No. 1 Brown Kraft Paper	25.00/ —	21.00/ —	25.00/ —	15.00/ —
Super Resorted Br. Kraft	25.00/ 30.00	30.00/ —	40.00/ —	30.00/ —
New Br. Kraft Env. Cuts	55.00/ 60.00	60.00/ 65.00	60.00/ 65.00	50.00/ —
New Br. Kraft Cuts	40.00/ 45.00	55.00/ —	45.00/ —	45.00/ —
No. 1 Gdwd. Shvs.	15.00/ 20.00	12.00/ 15.00	25.00/ —	16.00/ —
White Newsblanks	45.00/ 50.00	30.00/ —	— / 50.00	30.00/ —
No. 1 Flyleaf Shvs.	25.00/ 30.00	15.00/ 17.00	35.00/ 40.00	30.00/ —
No. 1 Soft Wht. Shvs.	65.00/ 70.00	55.00/ 60.00	70.00/ 80.00	55.00/ —
Super Soft Wht. Shvs.	85.00/ 90.00	60.00/ 65.00	80.00/100.00	65.00/ —
Hd. Wht. Shvs.	80.00/ 90.00	70.00/ 75.00	80.00/ —	80.00/ —
Hd. Wht. Env. Cuts.	95.00/100.00	90.00/ 95.00	90.00/105.00	90.00/ —
New Manila Env. Cuts.	60.00/ 70.00	60.00/ —	60.00/ 70.00	55.00/ —
Col. Tab Cards	25.00/ 30.00	20.00/ 25.00	— / —	30.00/ —
Manila Tab Cards	60.00/ 65.00	60.00/ 65.00	65.00/ 75.00	50.00/ —
No. 1 Mixed Ledger	27.50/ 30.00	20.00/ 25.00	37.50/ —	30.00/ —
White Ledger	35.00/ 40.00	30.00/ 35.00	45.00/ 50.00	40.00/ —
Mixed Books & Mags.	7.00/ 8.00	4.00/ 5.00	12.00/ —	7.00/ —
No. 1 Rep'd Hvy. Books & Mags.	15.00/ 17.00	8.00/ 10.00	22.00/ 23.00	20.00/ —

The following prices are representative of distributors' resale prices, all deliveries in Zone 4

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds

	4 Ctns. per cwt.
100% Rag Ex. No. 1	$51.40/$53.90
100% Rag	44.55/ 46.15
75% Rag	33.90/ 35.40
50% Rag	28.10/ 29.55
25% Rag	24.85/ 26.80

Ledgers

	4 Ctns. per cwt.
100% Rag Ex. No. 1	$52.65/$54.55
100% Rag	45.65/ 46.40
75% Rag	35.15/ 36.10
50% Rag	29.40/ 30.05
25% Rag	26.15/ 26.80

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds

	4 Ctns. per cwt.
No. 1	$17.50/ —
No. 2	16.65/ 16.75
No. 4	15.60/ 15.95

Ledgers

	4 Ctns. per cwt.
No. 1	$18.80/ —
No. 2	18.05/ —

White Book

	Case
	per cwt.
Conversion Coated	
No. 1	$20.75/$20.90
No. 2	19.50/ 19.65
No. 3	18.15/ 18.90
Machine Coated	
No. 1	16.40/ 16.65
No. 2	14.90/ 15.15
Uncoated	
No. 1 Antique (Watermarked)	16.40/ 17.90
Offset	15.15/ 16.65
A Grade E. F.	15.40/ —
A Grade S. C.	15.90/ 16.15
B Grade E. F.	14.90/ 15.15
B Grade S. C.	15.40/ 15.65

Twines
All Prices Nominal, F.o.b. Mill

(Soft Fiber)	
Coarse Polished—India	.35½/ .36½
Fine Polished India	.41½/ .45
Unpolished—Paper Makers	.32¼/ .34½
Tube Rope	.33¼/ .35½
Wrapping	.36 / .38¾
Cotton	.58 / .60
Polished Cotton	.55 / —
(Hard Fiber)	
Mex. Sisal	.21 / .27
(American Hemp)	
Polished Hemp	.45 / .48
Unpolished	.35 / .37½

Rag Market

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
White Shirt	$10.00/ $10.50
Unbleached Muslin	10.00/ 10.50
Light Silesias	7.00/ 7.50
White Back Blue Overalls	6.25/ 6.50
Blue Overalls	6.00/ 6.25
Fancy Shirt	4.50/ 5.00
Percales	5.50/ 6.00
Light Prints	5.50/ 6.00
No. 1 Washables	2.75/ 3.00
Bleachable Khaki	5.00/ 5.50
Unbleachable Khaki	4.50/ 5.00
Cottonades	4.25/ 4.75
Lt. Flannelettes	7.00/ 7.50
Men's Corduroy	3.50/ 4.00
Women's Corduroy	3.00/ 3.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
No. 1 Whites, Repacked	$4.25/ $4.75
No. 1 Whites, Miscellaneous	3.50/ 4.00
No. 2 Whites, Repacked	2.75/ 3.00

No. 2 Whites, Miscellaneous	**2.00/**	**2.25**
Cotton Pants & Overalls	2.50/	2.75
Thirds and Blues, Repacked	2.00/	2.25
No. 1 Roofing Rags	1.25/	1.35
No. 2 Roofing Rags	1.00/	1.20
No. 3 Jute Bagging	**.95/**	**1.05**
No. 4 Brussels & brd. Bck'd crpts.	**.90/**	**1.00**
Roofing Bagging	**.80/**	**.95**

New Foreign Cotton Cuttings

(Prices to Dealer, f.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	prices
New Mixed Cuttings	
Light Silesias	
Light Flannelettes	
New White Cuttings	are
New Unbleached Cuttings	
Fancy Shirt Cuttings	nominal
Light Prints	
Bleachable Khaki, No. 1	
Unbl. Khaki, No. 1	

Old Foreign Rags

(Prices to Dealer, f.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	prices
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Old Light Prints	are
Med. Light Prints	
Dutch Blue Cottons	
Checks and Blues	
Linsey Garments	nominal
Dark Cottons, European	
Dark Cottons, Egyptian	
Old Shopperies	
New Shopperies	

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	**$7.50/ $8.00**
Domestic Gunny, No. 1	7.50/ 8.00
Heavy Wool Tares	6.50/ 7.00
No. 1 Scrap Bagging	**4.75/ 5.00**
Foreign Manila Rope	**5.50/ 5.75**
Domestic Manila Rope	**5.50/ 5.75**
Jute Strings	**6.25/ 6.50**
No. 1 Sisal Strings	5.00/ 5.25
Mixed Strings	**1.15/ 1.30**

PHILADELPHIA

Domestic Rags (new)

(F.o.b. Eastern Shipping Point)

	Per 100 lbs.
White Shirt	**$10.25/$10.50**
Fancy Shirts	5.00/ 5.25
Light Silesias	**6.75/ 7.00**
Unbleached Muslin	**10.00/ 10.25**
Light Prints	**5.25/ 5.50**
Washable No. 1	2.75/ 3.25
Blue Overall	**6.00/ 6.25**
Percales	**5.50/ 5.75**
Unbleachable Khaki	3.50/ 4.00
Bleachable Khaki	4.50/ 5.00
Men's Corduroy	3.75/ 4.25
Ladies' Corduroy	3.25/ 3.75
Cottonades	3.75/ 4.00

Domestic Rags (old)

(F.o.b. Eastern Shipping Point)

	Per 100 lbs.
Mixed White	$3.00/ 3.25
Thirds and Blues Repacked	2.25/ 2.50
Cotton Pants & Overalls	2.75/ 3.00
No. 1 Roofing Stock	1.00/ 1.10
No. 2 Roofing Stock	.90/ 1.00
Roofing Bagging	.80/ .90

Bagging

(F.o.b. Eastern Shipping Point)

	Per 100 lbs.
Old Manila Rope	$5.50/ —
Foreign Gunny No. 1	**8.00/ —**
Domestic Gunny No. 1	**8.00/ —**
Sisal Strings No. 1	3.50/ —
No. 1 Scrap	4.50/ 5.00
No. 1 Jute Rope	6.00/ —

BOSTON

Bagging

(F.o.b. Boston)

	Per 100 lbs.
Foreign Gunny	8.00 / 8.50
Domestic Gunny	8.00 / 8.50
Domestic No. 1 Old Rope	6.00 / 6.25
Foreign No. 1 Old Rope	**6.50 / —**
Mixed Strings	1.35 / —
Transmission Rope—Domestic	**3.00 / 3.50**
Jute Carpet Threads	— / 4.00
Bleachery Burlap	— / 9.00
Scrap Burlap—	
Foreign	— / 5.75
Domestic	— / 5.75
South America	6.00 / 6.50
Austr. Wool Pouches	8.25 / —
New Zealand Wool Pouches	— / 6.00
New Burlap Cuttings	**8.50 / —**
Heavy Baling Bagging	7.50 / 8.00
Paper Mill Bagging	— / 5.00

Domestic Rags (new)

(F.o.b. Boston)

	Per 100 lbs.
New Light Prints	5.75 / 6.00
Fancy Percales	6.00 / 6.25
White No. 1 Shirt	10.00 /10.75
Light Flannelettes	**— / 7.00**
Canton Flannels, Bleached	**— / 9.00**
Underwear Cutters, Bleached	10.75 /11.25
Underwear Cutters, Unbleached	10.00 /10.25
Blue Overalls	5.75 / 6.25
Soft Unbleached	9.75 /10.50
Blue Cheviots	5.75 / 6.25
Fancy Shirt	4.00 / 4.50
Washable	3.25 / 3.50
Khaki Cuttings	5.00 / 5.25
Men's Corduroy	**4.50 / —**
Khaki Canvas	— / 5.50
B. V. D. Cuttings	10.00 /10.25

Domestic Rags (old)

(F.o.b. Boston)

	Per 100 lbs.
No. 1 Whites, Repacked	3.00 / 3.50
No. 1 Whites, Miscellaneous	2.50 / 3.00
Twos and Blues, Repacked	— / 2.00
Cotton Pants & Overalls	2.50 / 2.75
No. 1 Roofing Stock	1.00 / 1.10
No. 2 Roofing Stock	.90 / .95
Roofing Bagging	— / .70

MARKETS . . . . .

Blanc Fixe

Prices firm. Demand moderate. Supply adequate. Currently quoted at $85.00 in bags, car lots, at works, 6 cents per pound, l.c.l., deld. By-product supply somewhat restricted. Quoted at $77.50 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Prices steady. Demand easy. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l., works.

Casein

Market dullness pronounced. Prices firm. Current prices on processed acid precipitated casein at 19 to 21 cents per pound for domestic grades and 19½ to 20 cents for imported grades, f.o.b. shipping point, car lots.

Caustic Soda

Prices firm. Supplies available for prompt shipment. L.c.l. sales reported at competitive levels. Solid caustic is reported at $3.05 per cwt. flaked and ground is quoted at $3.45 per cwt., in 400 pound drums, $3.95 per cwt. in 100 pound drums—car lots at works; liquid 50 per cent in tank cars at $2.40 per cwt.; liquid 73 per cent in tank cars at $2.50 per cwt., at works.

China Clay

Prices firm. Demand easier, supply of domestic and imported ample. Domestic filler quoted at $10 to $12.50 per ton, car lots, f.o.b. mines. Coating clay is $15 to $25. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Supply condition tightened by seasonal water requirements. Prices firm. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt. in multi-tank cars, f.o.b., works.

Rosin

No offerings on open market. Heavy ECA export business and domestic inquiry is developing. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah, B, $5.75; G, H, I, K, $6.43; Savannah: B, $4.25; FF, $5.50.

Rosin Size

Supply good. Demand steady. Seventy percent gum and pale wood grades, tank cars, $5.45 to $5.55 f.o.b. southern shipping point.

Salt Cake

Prices cut $2.00 a ton. Demand fair. Domestic quoted at $22.00/$24.00, f.o.b. shipping point, freight allowed to destination.

Soda Ash

In free supply. Demand easier. Prices firm. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Starch, Corn

Prices advance 10c with corn market. Demand fair. Supply ample. Pearl grade currently quoted at $4.92 per 100 pound; powdered starch at $5.03 per 100 pounds; car lots, f.o.b. Chicago.

Starch, Potato

Market stronger. Moderate paper demand. Idaho quantities limited to warehouse. High grade quoted at $7.00 cwt., l.c.l., ex N. Y. whse. Supply tight. Ample Maine supply quoted $4.75, f.o.b. Maine warehouse; pearl grade, $4.60 cwt. f.o.b. Maine.

Sulphate of Alumina

Prices firm Supply good. Demand steady. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur

Prices firm. Demand sustained at good level. Supply good. Annual contracts are quoted at $18 per long ton, f.o.b. mines; $19.50, f.o.b. vessels, Gulf ports. Export price f.o.b. Gulf ports is $22.00 per long ton.

Talc

Prices steady. Demand continues ahead of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Tapioca Flour

New supplies begin to arrive. Superior high range from $9.85 to $11.00 cwt.; high grades $8.60/$9.50 cwt., on dock Atlantic and Gulf ports; medium grades range from $8.25/— cwt. on dock, N. Y.

Titanium Dioxide

Prices firm. Supply reported now in balance with eased demand. Anastase 19½c pound carload lots, 20c l.c.l., rutile, 21½c pound carload lots, 22½c l.c.l.; 50-pound bags, f.o.b. plant, actual freight allowed.

UK Supplying Home Markets

WASHINGTON, D. C.—Home market needs for soda ash and caustic soda in the U. K. are being supplied fully by the domestic industry, according to the Secretary of Overseas Trade, as reported here through channels. In addition, export demands for soda ash are being filled, but it was indicated that a similar increase in shipments of caustic soda is being held back by lack of supplies.

From France, it was reported that power shortages the past two winters have hampered production of electrochemicals, including chlorine, caustic soda, calcium carbide and others.

Meanwhile, under a new trade agreement, the U. K. is scheduled to supply Egypt during the current year, with 5,000 tons of caustic soda, among other chemicals.

Caustic soda production at the Koeln-Falk plant in German North Rhine-Westphalia began at the end of February, and is increasing.

Casein Finds New Market

CAMBRIDGE, Mass.—A new market is open for casein in the newly-developed Caslen, a curled casein fiber which is being used where the resiliency of horsehair previously had been uniquely suitable, Arthur D. Little, Inc. *Industrial Bulletin reports.* The new fiber used as a single filament a few thousandths of an inch thick, is cheaper than the best quality horsehair, equally resilient, and much more dependably

(Continued on page 48)

FINANCIAL RECORD •

PREFERRED STOCKS	Per Share Earnings Calendar Year 1948	Per Share Earnings 12 Mo. to Approx. 3/31/49	Indic. Annual Divid. Rate	July 26 Approx Market Price
Armstrong Cork Co. $3.75 Cum.	**$46.33***	**$46.33***	**$3.75**	98¼
Armstrong Cork Co. $4.00 Cum. Conv.	**46.33***	**46.33***	**4.00**	108½
Celotex Corp. 5% Cum.	**26.42c**	**15.31i**	**1.00**	16
Champion Paper & Fibre $4.50 Cum.	**61.80j**	**99.97f**	**4.50**	95½
Container Corp. of Amer. 4% Cum.	**105.41**	**104.24**	**4.00**	95¼
Crown Zellerbach $4.20 Cum.	59.10c	61.84i	4.20	98½
Crown Zellerbach $4.00 Cum. Conv. 2nd	55.88c*	58.59i*	4.00	94¼
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	**10.10**	**11.71**	**2.50**	47⅞
Flintkote Co. $4 Cum.	**83.25**	**74.66**	**4.00**	99⅝
Robert Gair Co., Inc. 6% Cum.	**17.08**	**15.96**	**1.20**	16⅛
International Paper Co. $4 Cum.	**263.00**	**265.18**	**4.00**	96½
Johns-Manville $3.50 Cum.	209.89	212.03a	3.50	106⅜
Kimberly Clark Corp. 4½% Cum.	**80.74**	**77.94**	**4.50**	103½
Kimberly Clark Corp. 4% Cum. Conv. 2nd	**41.59***	**46.40**	**4.00**	93½
MacAndrews & Forbes 6% Cum.	62.23	60.44	6.00	132¼
Mead Corp. 4¼% Cum.	73.46	68.78k	4.25	76½
Mead Corp. 4% Cum. Conv. 2nd	29.91*	24.30k	2.00	33
Paraffine Cos. Inc. 4% Cum. Conv.	**136.11**	**158.51**	**4.00**	103
Rayonier Inc. $2 Cum.	**16.43**	**15.72**	**2.00**	30¼
St. Regis Paper Co. 4.40% 1st A	79.90	51.11a	4.40	78¾
Scott Paper Co. $3.40 Cum.	**59.06**	**66.09**	**3.40**	94
U. S. Gypsum Co. 7% Cum.	**314.45**	**314.18**	**7.00**	177
United Wallpaper Inc. 4% Cum. Conv.	**(d)0.79**	**15.44**	**2.00**	23¾
West Virginia Pulp & Paper 4½% Cum.	79.45c	77.54i	4.50	106⅜

COMMON STOCKS				
APW Products Co.	**$0.73**	**$0.22**	**$0.25**	2⅞
American Writing Paper Corp.	**(d)0.15**	**(d)0.15**	**0.25**	5⅜
Armstrong Cork Co.	**7.54**	**n.a.**	**3.00**	45⅜
Celotex Corp.	7.21c	4.06i	1.00	16⅛
Certain-Teed Prods. Corp.	**4.02**	**3.57**	**1.00**	11⅜
Champion Paper & Fibre	**5.34j**	**8.70f**	**2.00**	22½
Congoleum Nairn Co.	**5.78**	**n.a.**	**2.25**	27⅝
Container Corp. of America	**10.12**	**9.98**	**4.50**	34½
Crown Zellerbach	6.70c	6.85i	2.00	24⅞
Dixie Cup Co.	**6.70**	**8.11**	**1.00**	26½
Eastern Corp.	**4.76**	**3.10**	**(h)**	8⅝
Flintkote Co.	**5.86**	**5.13**	**2.50**	26½
Robert Gair Co., Inc.	**2.67**	**2.48**	**0.70**	5⅝
Great Northern Paper Co.	**4.63**	**5.12**	**2.80**	37
International Paper Co.	**16.73**	**16.87**	**5.00**	49¼
Johns-Manville Corp.	5.22	5.27a	2.00	38⅝
Kimberly Clark Corp.	**5.02**	**4.83**	**1.65**	19½
MacAndrews & Forbes Co.	3.68	3.56	2.50	33½
Marathon Corp.	**4.11c**	**3.76i**	**1.40**	20¾
Mead Corp.	6.36	5.84k	1.00	12⅝
National Container Corp.	**2.28**	**1.80**	**0.40**	5⅜
Paraffine Cos. Inc.	**2.45**	**2.49**	**1.20**	17⅛
Rayonier, Inc.	**9.09**	**8.64**	**2.00**	25⅛
Ruberoid Co.	**11.80**	**9.87**	**3.25**	47½
St. Regis Paper Co.	2.71	1.64a	0.60	6⅞
Scott Paper Co.	**4.15**	**4.68**	**2.50**	56½
Sutherland Paper Co.	6.02	4.92a	2.50	38½
Union Bag & Paper Corp.	9.17	6.50a	3.50	22⅞
United Board & Carton	**2.04b**	**(d)0.35i**	**(e)**	5½
U. S. Gypsum Co.	**15.04**	**13.03**	**6.00**	99½
United Wallpaper	**(d)0.10**	**0.42**	**(n)**	3⅝
West Virginia Pulp & Paper	11.33e	10.93i	4.00	40⅞

(a) 12 months to approximately 6/30/49
(b) Year ended 11/23/48
(c) Year ended 10/31/48
(d) Deficit
(e) Omitted dividend 2/4/49
(f) 11 months to 3/31/49
(g) 12 months to approximately 1/31/49
(h) Directors took no action on August dividend—last payment 5/2/49
(i) 12 months to approximately 4/30/49
(j) 8 months to 12/31/48
(k) 12 months to approximately June 12
(n) Last payment 25c, 9/16/47
n.a. Not available

(*) Earnings per combined preferred shares.

Dividends Declared

Brown Co. declared a dividend of $1.50 per prefered share payable Sept. 1 to holders of record Aug. 10.

Chesapeake Corp. of Va. announces net profit for the 24 weeks period ended June 19 equal to $1.62 per common share outstanding, compared with $3.33 in 1948's period.

Consolidated Paper Corp. Ltd. announced net profit equal to $2.09 a share for the six months ended June 30, compared with $2.47 a share for 1948's period.

Powell River C. Ltd. reports net earnings per share at $2.63 for the six months ended June 30, compared with $2.53 in 1948's period, subject to audit.

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

•

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Minneapolis Springfield
New Bedford Wilkes-Barre

New York Teletype NY 1-193

Nekoosa Edwards Paper Co. earned $1.63 a share for the six months period just ended, contrasted with $4.54 a share for same period of 1948.

Minnesota and Ontario Paper Co. announced net sales for the six months ended June 30, 1949 at $21,509,180, compared with $25,966,341 for like period of 1948. Net profits after taxes, subject to audit, for the period were $1,735,525 or $1.35 per share.

Stock Offering

NEW YORK—A secondary distribution of 27,811 shares of Kimberly-Clark Corp. common stock is being offered at $19.50 a share by Blyth & Co., Inc.

Earnings Reported

OTTAWA—*Argus Corp.* reporting on investments' income for the six months ended May 31, 1949, announces investment of the company in Canada include 200,000 shares of British Columbia Forest Products Co. (common) with market value of $525,000 at last record sales price on May 31, 1949, forming 10 percent of outstanding shares.

OTTAWA—*Pacific Mills Ltd.* reports net profit for the year ended April 30, 1949 was up 32.1 percent. Sales dollar volume increased 18 percent to $20,440,933, compared with $17,306,451 for the preceding year. Net profit is announced at $3,282,295 for the year, against $2,484,372.

Container Corp. announces quarterly dividend of 75 cents per common share payable Aug. 19 to holders of record Aug. 5, and quarterly dividend of $1.00 per preferred share payable Sept. 1 to holders of record of Aug. 19. For the six months ended June 30, net earnings are reported at $3.45 per common share contrasted with $4.05 for 1948's period.

St. Regis Paper Co. reports net income for the first six months of 1949 at $3,202,888 or 54 cents a common share, contrasted with $8,744,935 or $1.61 in 1948's period. Sales for the period totaled $66,123,268 compared with $83,907,818 in 1948. Regular quarterly dividend of 15 cents per common share is payable Sept. 1 to stockholders of record Aug. 5.

Union Bag & Paper Corp. reports net income of $3,258,016 or $2.19 per capital share for six months period of 1949, contrasted with $7,273,367 or $4.90 for 1948. Net income totaled $1,091,280 or 73 cents contrasted with $2,166,736 or $1.46 in the preceding quarter, and with $3,621,212 or $2.44 per capital share for June quarter of 1948.

Industry Earnings Gain

WASHINGTON, D.C.—Publicly-reported dividend payments for the paper and printing industries showed a combined total of $5,200,000 in May, 1949, compared with $4,800,000 a year previously, the Department of Commerce reported this week.

Mathieson Earnings Rise

NEW YORK — Mathieson Chemical Corp. announce earnings for the second quarter of 1949 amounting to $1.53 per common share, and $2.47 per share for the six months period of 1949, compared with $1.24 for the quarter and $2.16 for six months period of 1948. (These do not include the earnings of Standard Wholesale Phosphate & Acid Works, Inc., and of Southern Acid & Sulphur Co. Inc. recently acquired by Mathieson.) The report also confirms purchase of the Baltimore's largest building—34 story—which will be renamed Mathieson Building and will house the executive offices of the organization before the end of this year.

Building

- **FOR THE PAPER INDUSTRY**
- We design, build, and equip paper and pulp mills ... steam generating plants ... and facilities for eliminating stream pollution.
- Under one contract and one responsibility, we deliver jobs complete, ready for operation.
- We also furnish engineering reports and surveys. Current cost data available at all offices.

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INDUSTRIAL ENGINEERS AND BUILDERS

THE FERGUSON BUILDING • CLEVELAND, OHIO
OFFICES IN NEW YORK, HOUSTON, CHICAGO, CINCINNATI AND LOS ANGELES

IMPORTS

IMPORTS AT NEW YORK

Week Ending July 23

Newsprint

N. Y. Journal American, Markland, Liverpool, N.S., 572 rolls.
N. Y. Herald Tribune, Markland, Liverpool, N.S., 1713 rolls.
N. Y. World Telegram, Markland, Liverpool, N.S., 969 rolls.
Brooklyn Eagle, Inc., Markland, Liverpool, N.S., 599 rolls.
Brooklyn Eagle Press, Inc., Markland, Liverpool, N.S., 61 rolls.
Herald Statesman Inc., Markland, Liverpool, N.S., 42 rolls.
Washington Post, (Alexandria, Va.), Markland, Liverpool, N.S., 2360 rolls.
Alexandria Gazette, (Alexandria, Va.), Markland, Liverpool, N.S., 34 rolls.
Price & Pierce, Ltd., (Alexandria, Va.), Markland, Liverpool, N.S., 22 rolls.
R. L. Flores, (Brownsville, Tex.), Federal Mariner, Montreal, 912 rolls.
News Syndicate Co., Robert Barnes Fiertz, Thorold, 1500 rolls.
H. G. Craig Co., Kermic, Donnacona, 358 rolls.
News Syndicate Co., Colabee, Baie Comeau, 7435 rolls.
Madden Reeve Angel & Co., Inc., Rydboholm, Kotka, 951 rolls.
H. G. Craig Co., A.C.D., Donnacona, 369 rolls.

Photo Paper

J. J. Gavin & Co., Queen Elizabeth, Southampton, 6 cs. (unsensitized).
Dunster Trading Co., Laura Maersk, Hong Kong, 165 cs.

Uncoated Paper

F. C. Strype, Blommersdyk, Rotterdam, 5 cs.

Baryta Coated Paper

MacGraw Colorgraph Co., Gudrun Maersk Antwerp, 2 rolls.

Writing Paper

Globe Shipping Co., American Merchant, Havre, 1 cs.

Wallpaper

Hudson Shipping Co., American Merchant, Havre, 25 pkgs.
(———), Laura Maersk, Shimidzu, 1 ble.
C. A. Haynes & Co., Media, Liverpool, 39 ctns.
Hudson Shipping Co., Ogna, Havre, 63 pkgs.

Boxboard

Jay Madden Corp., Rydboholm, Kotka, 133 rolls (folding).

Tissue Paper

B. F. Drakenfeld & Co., Media, Liverpool, 34 cs. (samples).

Paper Serviettes

A. C. O. Leather Goods Co., American Merchant, Hamburg, 54 bls.
Freud Mayer, Caronia, Southampton, 1 cs.

Printing Paper

Olympic Shipping Co., American Merchant, Havre, 16 cs.

Drawing Paper

H. Reeve Angel & Co., Caronia, Southampton, 4 cs.

Filter Paper

H. Reeve Angel & Co., Caronia, Southampton, 42 cs.

Paperhangings

C. A. Haynes & Co., Washington, Southampton, 4 bls.
W. H. S. Lloyd & Co., Washington, Southampton, 9 bls., 3 cs.

Cardboards

Lehn & Fink Products Corp., Washington, Havre, 1 cs.

Miscellaneous Paper

M. J. Corbett & Co., Arkeldyk, Rotterdam, 1 cs.

Rags, Baggings, Etc.

New England Waste Co., Explorer, Cochin, 100 bls. cotton waste.
E. J. Keller Co., Inc., Explorer, Bombay, 100 bls. old jute rags.
Brandwein Mazur Co., Explorer, Bombay, 200 bls. cotton waste.
J. P. Fleisig, Explorer, Bombay, 100 bls. old jute rags.
Railway Supply & Manufacturing Co., Explorer, Bombay, 100 bls. old jute rags.
S. H. Waldstein, Explorer, Bombay, 250 bls. old jute rags.
New England Waste Co., Excalibur, Genoa, 168 bls. cotton waste.
Guaranty Trust Co., Arkeldyk, Rotterdam, 68 bls. old bagging.
Royal Manufacturing Co., Arkeldyk, Rotterdam, 52 bls. cotton waste.
(———), Black Falcon, Antwerp, 83 bls. flax waste.

National City Bank, Alabaman, Antwerp, 199 bls. rags.
Midwest Waste Materials Co., Alabaman, Antwerp, 672 bls. scrap bagging, 60 bls. new jute cuttings, 43 bls. paperstock, 445 bls. flaxwaste.
(———), Alabaman, Antwerp, 69 bls. scrap bagging.
Midwest Waste Materials Co., Blommersdyk, Rotterdam, 99 bls. scrap bagging.
J. P. Fleisig, Blommersdyk, Rotterdam, 92 bls. old jute rags.
Kauders Steuber Co., Rio Branco, Leningrad, 1278 bls. cotton waste.
C. Kutz, Rio Branco, Leningrad, 145 bls. cotton linters, 303 bls. cotton waste.
Chase National Bank, Stavelot, Antwerp, 125 bls. cotton waste.
(———), Magdapur, Calcutta, 87 bls. paperstock.
Chemical Bank Trust Co., Sven Salen, Shanghai, 143 bls. bagging.
Chase National Bank, Media, Liverpool, 22 bls. wool thread waste, 124 bls. new wool rags, 172 bls. wool rags.
American Express Co., Media, Liverpool, 17 bls. new wool rags.
(———), Gudrun Maersk, Antwerp, 220 bls. flaxwaste.
Midwest Waste Materials Co., Gudrun Maersk, Antwerp, 150 bls. scrap bagging.
A. de Vries Trading Corp., Gudrun Maersk, Antwerp, 45 bls. scrap bagging.
National Commercial Bank Trust Co., Ogna, Havre, 16 bls. cotton rags.

Old Rope, Etc.

W. J. Green, Explorer, Calcutta, 38 bls. old hemp rope cuttings.
(———), Magdapur, Calcutta, 60 bls. rope cuttings.
(———), American Judge, Antwerp, 106 rolls old rope.
E. J. Keller Co., Inc., Gudrun Maersk, Rotterdam, 78 coils, 19 pkgs. old rope.

Woodpulp

Castle & Overton, Inc., Frierfjord, Tofte, 4200 bls. dry bleached sulphite pulp, 2000 bls. prime bleached sulphite pulp.

Woodpulp Boards

Jay Madden Corp., Rydboholm, Kotka, 545 bls., 3 rolls (solid white).

IMPORTS AT BOSTON

Week Ending July 23

S. W. Miller, Blommersdyk, Rotterdam, 13 bls. rags.

IMPORTS AT PHILADELPHIA

Week Ending July 23

Madden Reeve Angel & Co., Inc., Rydboholm, Kotka, 761 rolls newsprint.
Pulp Sales Corp., Rydboholm, Kotka, 1040 bls. bls. prime unbleached sulphite pulp, 2371 bls. prime unbleached sulphate pulp, 902 bls. prime bleached sulphite pulp.
Jay Madder Corp., Rydboholm, Kotka, 71 rolls solid white wood pulp boards.
A. L. Diament & Co., Ogna, Havre, 21 cs. wallpaper.

IMPORTS AT BALTIMORE

Week Ending July 23

Madden Reeve Angel & Co., Inc., Rydboholm, Kotka, 139 rolls newsprint.
Pulp Sales Corp., Rydboholm, Kotka, 1032 bls. prime unbleached sulphite pulp.

IMPORTS AT NORFOLK

Week Ending July 23

Castle & Overton, Inc., Explorer, Cochin, 229 bls. old jute rags.
H. Adlerstein, Excalibur, Genoa, 234 bls. old jute rags.
Security National Bank Raleigh, Blommersdyk, Rotterdam, 128 rolls newsprint.

IMPORTS AT JACKSONVILLE

Week Ending July 23

Madden Reeve Angel & Co., Inc., Rydboholm, Kotka, 2318 rolls, 784 bls. newsprint.

IMPORTS AT NEW ORLEANS

Week Ending July 23

Madden Reeve Angel & Co., Rydboholm, Kotka, 2 rolls newsprint.

IMPORTS AT HOUSTON

Week Ending July 23

Madden Reeve Angel & Co., Inc., Rydboholm, Kotka, 639 rolls newsprint.

Canadian Imports

OTTAWA—Canadian Government reveals imports of laminated products paper base from the U.S. during the first quarter of 1949 amounting to $214,163, against $148,648 in like period of 1948.

OTTAWA—In view of the British Government's announced intention to curtail imports from dollar countries like Canada, it is pointed out that Canadian shipments to Britain during 1948 involved the following, with figures for the preceding 12 months given in brackets: Newsprint, $5.3 millions ($4.6 millions); other paper, $5.3 millions ($5.1 millions); woodpulp, $21.4 millions ($14.7 millions); asbestos, etc., $3.3 millions ($2.3 millions); book, printed matter, $500,000 ($1,600,000).

OTTAWA—Imports of primary forms of iron and steel during April this year

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CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.
CORINTH, N. Y.

are reported by the Canadian Government as 1,029 tons of carbon and 4.2 tons stainless for pulp-mill digester boilers from the U.S., reaching a total of 2,518 tons of carton and 4.9 tons of stainless in the first four months of 1949.

Also imported from the U.S. in first four months were 66 tons of carbon for repair of pulp-mill digesters, hot-finished.

MARKETS

Casein Finds New Market

(Continued from page 44)

uniform and available. The process was suggested by work of the Department of Agriculture, and was developed for these applications by Arthur D. Little, Inc., and the Rubberset Company, which is now producing Caslen.

Casein, obtained from skim milk, is one of the proteins, as are wool, horsehair, and human hair. When 'regenerated" in fiber form it will take a permanent curl which gives a mass of fibers a springy quality. Curled Caslen is now used in a new automotive air filter made by Fram Corp.; here the Caslen blended with wool filters dust from the air entering the carburetor. The filter unit can be used in old cars as well as new, and can be replaced more easily than the oil in conventional filters can be renewed. Mattress and furniture manufacturers are experimenting with Caslen as stuffing; in an uncurled form which is also available it may be blended into textiles to produce novel effects.

HUNTING FOR GLYCERINE?

Armour has it as close as your phone. Just call the nearest of Armour's 332 convenient stock points for all grades. Quick delivery keeps your inventories low.

ARMOUR *Glycerine Division*

Armour and Co., 1355 W. 31st St., Chicago 9, Ill.

Curled Horsehair

The horsehair which has been used primarily as stuffing comes chiefly from Argentina, where wild horses are rounded up each year and their manes and tails are cut. After the raw hair arrives in the United States, it is curled by a laborious hand process. A rope-like roving, about 80 feet long, is softened by steam, wound tightly, and then hung for about six months to set the "permanent wave." When it is torn apart, the intertwined hair makes a soft springy bat. The supply and quality of horsehair fluctuates, and there are indications that the supply is diminishing. About two and a half million pounds were imported in 1948 and sold at $1.25 to $1.40 a pound.

Curled Casein

The curled casein monofilament is now selling for 94 cents a pound, but the price may decline as production increases and the price of dry casein drops. During the war, skim milk was used widely in dried form for human feeding. As foods become more abundant and cheap and surpluses become a problem, the casein market may help to stabilize farm income to some extent.

When skim milk is solidified by hydrochloric or other acids, the casein settles out as a curd, similar to that obtained when milk sours naturally. The casein is dried, water is added, it is heated, and forced through fine jets. The resulting filament is hardened in a tanning agent such as formaldehyde, curled, and dried to a permanent set.

Besides its favorable price position, the curled casein is uniformly clean, the diameter and length of the staple are controllable, and it is believed to be non-allergic. Cleanliness is a particularly important point for mills handling large quantities of fiber, for the natural materials are often heavily contaminated. The filament may also be treated to make it mildew-, moth-, or bacteria-proof. The success of the new product as an improvement over natural horsehair is expected to give impetus to the whole field of filaments and textiles from regenerated proteins.

Rosin Output Dips

WASHINGTON, D.C.—Production of gum rosin during the first quarter was reported to the Bureau of Agricultural Economics at 92,880 barrels, slightly below the first quarter of last season.

Wood rosin production during June was reported at 20 percent below the corresponding month of 1948, while output for the April to June quarter was 13 percent less than 1948's period.

Gum rosin stocks were reported at 512,880 drums on June 30, compared with 167,870 drums for last season. Wood rosins stocks showed a rise of 26 percent with total of 115,680 drums.

CARLOADINGS

Canadian Carloadings

OTTAWA—Canadian Government reports on carloadings on Canadian railways of woodpulp and paper for the week ended July 9 show an advance to 3,593 cars from 2,804 cars in the preceding week and 3,605 in like week a year ago. The Eastern Div. accounted for 3,143 cars in week ended July 9, against 2,435 cars in previous week and 3,359 in last year's week, the Western Div. showing 450 cars, 369 and 535 cars in the same respective weeks.

Such carloadings of woodpulp and paper declined to a cumulative total of 108,316 cars in the period from the year's beginning to the week ended July 9, compared with 117,014 cars in like period last year. Eastern Div. accounted for a total of 94,692 cars this year, against 102,297 a year ago; while Western showed 13,724 cars this year and 14,717 in corresponding period of 1948.

ECA AUTHORIZATIONS

ECA Authorizes

WASHINGTON—Pulp, paper and paper products authorized for procurement under the ECA program this week totaled $190,000. No detail of the authorizations was released.

WASHINGTON, D.C. — Procurement authorizations for pulp and paper under the ECA program, from the start in April, 1948 to July 1, this year, total $76,400,000, the agency reported this week.

TRAFFIC

Freight Absorption Bill S.1008

By EDWIN CHESTER HASTINGS

The House recently passed amendments to the Federal Trade Commission Act in S. 1008, freight absorption bill.

Freight rate absorption has been subject to many months of verbal and written discussions. The muddled word *feast* in Washington has left American business without a key to guess what it could or could not do in the matter of *prices delivered!* It seems from the publicity given the "Cement Case" that all freight absorption is supposed to be illegal. But according to the gentlemen in Washington supporting the amendments this isn't so, and S. 1008 clarifies the cloudy horizon of business. The amendments read:

It shall not be an unfair method of competition or an unfair or deceptive act or practice for a seller, acting independently, to quote or sell at delivered prices or to absorb freight. Provided, that this shall not make lawful any combination, conspiracy, or collusive agreement, or any monopolistic, oppressive, deceptive, or fraudulent practice, carried out by or involving the use of delivered prices, or freight absorption.

According to SECTION 2 PAR. A—A seller *'acting independently'* does not commit an unlawful discrimination in price if he quotes or sells at delivered prices, if such prices are identical at different delivery points or if differences between such prices are not such that their ef-

fect upon competition may be that prohibited in Section A.

The seller can absorb freight to meet the equally low price of a competitor except where absorption of freight would be such that its effect upon competition may be prohibited by Section B. This may include the maintenance, above or below the price of such competitor, of a differential in prices which such seller customarily maintains.

SECTION 3, SEC. 2(B) is amended to read as follows:

Upon proof being made at any hearing on a complaint under this section, that there has been discrimination in price the effect of which upon competition may be that prohibited, or discrimination in services or facilities furnished, the burden of showing justification shall be upon the person charged with a violation of this section; and unless justification shall be affirmatively shown, the (Federal Trade) Commission is authorized to issue an order terminating the discrimination (if the discrimination is not such that its effect upon competition may be that prohibited by this section) by showing that his lower price of the furnishing of services or facilities to any purchaser or purchasers was made in good faith to meet an equally low price of a competitor, or the services or facilities furnished by a competitor.

SECTION 4—A—The word 'price' shall have the meaning which it has under the commercial law applicable to the transaction.

B. The term 'delivered price' shall mean a price at which a seller makes or offers to make delivery of a commodity to a buyer at any delivery point other than the seller's own place of business.

C. The term 'absorb freight' shall mean to establish for any commodity at any delivery point a delivered price which, although as low as or higher than the seller's price for the same commodity at the point from which such commodity is shipped, is lower than the sum of the seller's price for such commodity at such point of shipment plus the actual cost to the seller for transportation of such commodity from such point of shipment to the delivery point or the average cost of transportation to the seller.

D. The term 'the effect may be' shall mean that there is reasonable probability of the specified effect.

OBITUARIES

Peter Paul Lynn, salesman for Megargee Bros., Inc., Scranton and Wilkes-Barre, Pa., died at his home in Scranton, July 20, 1949. Survived by his wife, Katherine, two daughters and two sons.

R. Bell-Irving, director, Powell River Co. Ltd., on July 3, 1949.

J. E. Alcorn, vice president of Alling & Cory Co., Cleveland, Ohio, died on July 15. Was director and past president of Paper and Twine Ass'n.

Joseph Bisson, 68, formerly millwright with E. B. Eddy Co., J. R. Booth Co., and W. C. Edwards Lumber Co., died at his home in Ottawa on July 17 following a long illness. Surviving him are his widow, three daughters and four sons.

Walter V. Hunter, sales manager for Potdevin Machine Co., Brooklyn, N.Y., died on Wednesday, July 20. His wife and six children survive him.

James M. Davidson, superintendent of plant of Farrel-Birmingham Co. Inc., died July 15 after a brief illness. He is survived by his wife, a daughter and three brothers.

Andrew C. Nelson, 66, sales representative of Ace Carton Sales Corp., died in Chicago on July 11. Surviving him is his widow.

Warren C. Shaw, 42, sales engineer for E. D. Jones Co., Pittsfield, Mass., for 15 years, died suddenly on July 19 in Green Bay, Wis. Surviving are his widow, Mary, a daughter, Marilyn, and a brother, Harvey B. Shaw.

AMERICAN PAPER AND PULP ASSOCIATION'S PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1949		Corresponding Weeks—1948	
June 11	82.3	June 12	95.0
June 18	78.8	June 19	95.0
June 25	83.9	June 26	99.8
July 2	79.7	July 3	91.3
July 9 (Revised)	44.7	July 10	62.3
July 16	76.6	July 17	87.1

COMPARATIVE MONTHLY SUMMARIES

1948						1949	
Jan.	100.1	May	100.5	Oct.	99.1	Jan.	94.6
Feb.	99.8	June	95.7	Nov.	97.1	Feb.	92.8
Mar.	100.8	July	85.3	Dec.	87.1	Mar.	89.1
Apr.	100.8	Aug.	96.8			Apr.	85.1
		Sept.	91.8	Year Avg.	96.2	May	82.7
						June	80.9

COMPARATIVE YEARLY SUMMARIES

	1942	1943	1944	1945	1946	1947	1948	1949
Year to Date	95.7	87.7	87.3	87.5	99.2	103.5	97.8	85.6
Year Average	90.4	87.7	88.1	89.4	101.1	104.3	96.2	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1949		Corresponding Weeks—1948	
June 11	79	June 12	101
June 18	78	June 19	97
June 25	80	June 26	97
July 2	75	July 3	89
July 9	35	July 10	56
July 16	64	July 17	84

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1948	99	100	102	102	100	94	81	92	91	96	94	84	95
1949	88	85	79	79	78	75							

* All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

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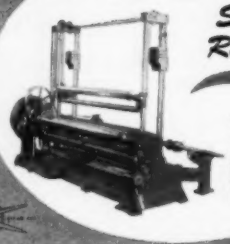

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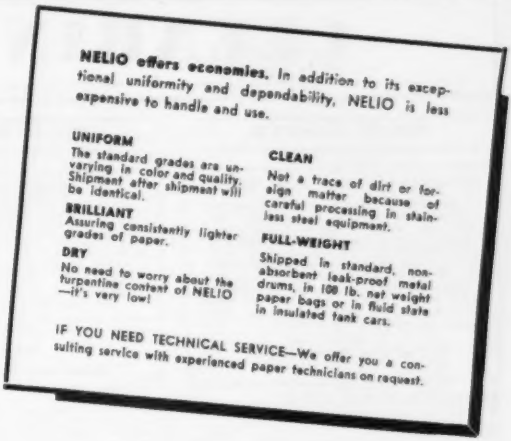
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WANTED—Young man experienced in manufacture and sales vulcanized fibre. Address Box 49-341 care Paper Trade Journal. TF

WANTED—Sales Manager by a long established reputable paper concern selling newsprint, groundwood specialties and printing papers. Mill connections essential. Write giving details, experience and qualifications to Box 49-350 care Paper Trade Journal. J-28

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MAINTENANCE SUPERVISOR WANTED —35 to 45 years of age with machine shop and mill experience, for industrial plant outside of Chicago. Must be well experienced and must have ambition and supervisory ability. Please give experience, education, age and expected salary. Address Box 49-365 care Paper Trade Journal. A-18

OPERATOR/SUPERVISOR WANTED — Thoroughly experienced in paper napkin machines, box sealing machines, box glueing, cellophane wrapping machines. Steady position and excellent opportunity. Address Box 49-361 care Paper Trade Journal. A-11

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in toilet paper mill. Latest perforator models. Complete charge of converting production. High production is essential. Man must be able to train and handle help. Permanent position with a future. Attractive salary. Mill located in New England. Address replies to Box 49-360 care Paper Trade Journal. J-28

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Man with experience interested in developing new markets for paper products. Sound background in use of synthetic resins to modify paper. Knowledge of European papers. Work with medium or small sized papermaking concern preferred. Write box 49-369, c o Paper Trade Journal. J-28

ENGINEER

Available after September first, graduate engineer, over fifteen years experience in pulp, paper and insulation board mill design and operation. Now engaged in consultation study for foreign mill. Desires permanent connection of executive assistant or junior executive nature. Box 49-359 care Paper Trade Journal. A-18

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Experience covers the manufacture and sale of Rag and Sulphite specialty papers used by the Graphic Arts Industry and special applications in the industrial field. Address Box 49-346, care Paper Trade Journal. A-4

EXECUTIVE—Board and paper conversion mill experience, excellent production and labor relations history, currently plant manager. Seeks opportunity. Address Box 49-239 care Paper Trade Journal. J-28

MILL SUPERINTENDENT or Assistant—Thorough experience in all grades of Tissue and Specialty Grades, desires new connections. Excellent production and labor relations background. Best references. Address Box 49-330 care Paper Trade Journal. J-28

AVAILABLE—Manager or Sales Manager for coarse paper jobber. Twenty years experience in buying, selling and sales promotion. Thoroughly versed in all types of twines, coarse paper, specialties and most fine papers. Extremely capable and hard working. Will locate anywhere. Address Box 49-338 care Paper Trade Journal. A-4

BAG MAN—ADJUSTER with twenty three years experience on flat and square machines. Desires connection with company as Adjuster, Foreman, or both. Address Box 49-343 care Paper Trade Journal. J-28

YOUNG, AMBITIOUS, technically trained and sales personality. Nine years experience in paperboard, packaging, pulping, various papers as chief chemist; technical advisor. Desires connection with present responsibility and future. Address Box 49-351 care Paper Trade Journal. A-4

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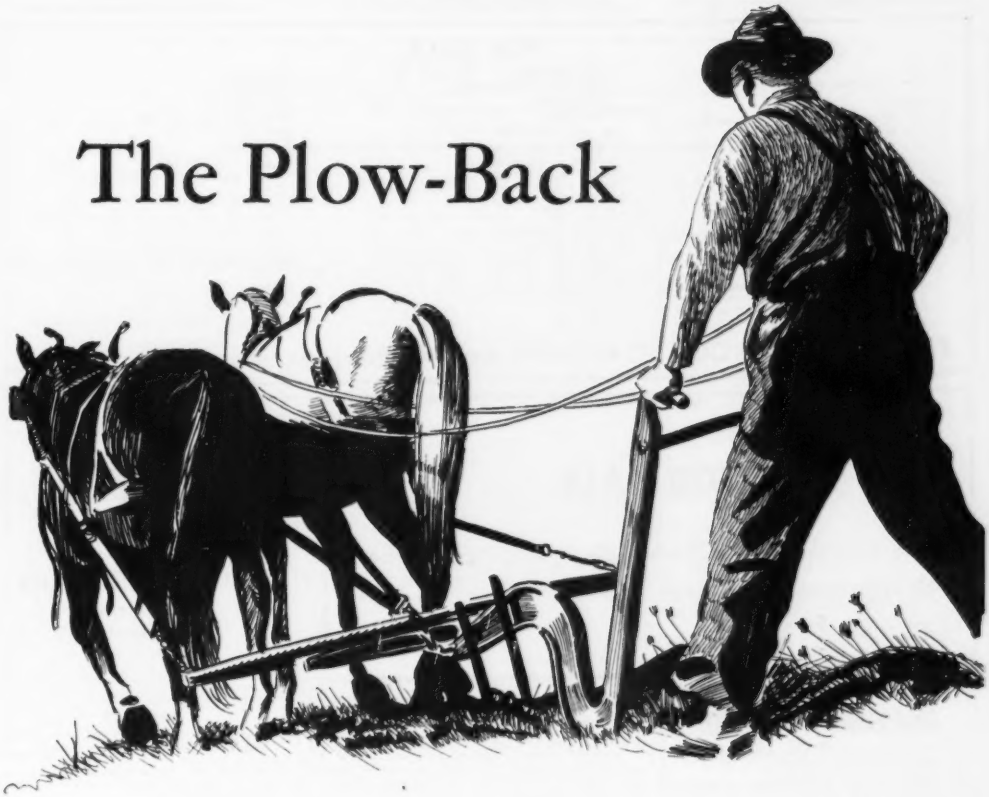
The Plow-Back



As you sow so shall you reap. The individual invests time and money in an education. The manufacturer "plows back" a liberal percentage of his gross into engineering and development.

The evidence of the liberal Black-Clawson "plow-back" is reflected in the many new equipment items and systems that have resulted.

No company in the group serving the paper industry exclusively has a better record in this regard than Black-Clawson. It is even doubtful that any can equal it.

Wider and faster cylinder machines.
Various Fourdrinier features.
Specialized jordans.
Breaker beaters.
Stock-cleaning systems.
Hydrapulpers.
HYDRAFINERS.
Waxers—water finishers, etc.

Submit your mill problems to The Black-Clawson organization at Hamilton, Middletown or Fulton. Their combined engineering staff is manned to handle them.

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PRODUCT OF DILTS

THE BLACK-CLAWSON CO.

HAMILTON, OHIO

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Subsidiary: B-C International, Ltd., 16 Catherine Place, Victoria, London S.W.1, England

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BALER
1—1000 lb. Economy with motor

BEATERS
2—64 x 84 Jones iron tub, stainless steel bars
2—76 x 85 Rabus, bronze filled rolls
2—66 x 57 Jones iron tub, perforated backfall

SUPER CALENDERS
108"—82"—74"—60"

SHEET CUTTERS
1—136" Horne duplex
1—New 104" Hamblet duplex with layboy and unwind stand
1—84" Clark with layboy
1—92" Dillon duplex with folder
1—84" Hamblet duplex, heavy, Model 28, duplex layboy
1—70" Clark
1—64" Hamblet

REAM CUTTERS
1—56" Smith and Winchester
1—56" Oswego
1—48" Acme

DRYERS
1—12 ft. x 106" Yankee
1—12 ft. x 132" Yankee
2—8 ft. x 174" Yankee
5—60" x 174"
3—48 x 126"
3—48 x 118"
4—48 x 120"
1—42 x 126"
34—36 x 80"
21—36 x 76"
2—42 x 73"
2—48 x 73"
16—36 x 62"
15—48 x 46"
4—84 x 48"
7—36 x 38"

EMBOSSERS
45" Dornbusch
80" Waldron
20" Textile, three sets rolls

MOULDS
2—42 x 121"
8—36 x 126"
7—30 x 102"
2—42 x 52"
2—36 x 92"
1—60 x 84"
1—48 x 84"
4—30 x 70"
2—36 x 46# De-Inker with vats, etc., rubber couch

JORDAN
1—#2 Appleton
1—New Mammoth Jr.
1—New Pony

FRANK H. DAVIS CO. 175 Richdale Ave., Cambridge, Mass. TF

FOR SALE

One two machine mill—Middle West. Box Number 49-361 care Paper Trade Journal. A-4

FOR SALE

6—Paper Machine Drives ,75 h. p., ratio 8 to 1. All enclosed, with automatic clutches.

A-1 condition.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark, N. J.
Telephone Bigelow 3-3720

J-28

GOOD VALUES—NEW & USED

34" Beck Sheeter, one year old.
58" and 78" Hamblet Sheeters.
34" Camachine No. 6 Slitter.
32" Hobbs and 34" Inman shear cut Slitters—very cheap.
39" Chandler & Price Automatic Power Paper Cutter.
New 44" National Auto. Power Cutters and 36" National Hydraulics.
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(Plant at Stamford, Conn.)

TF

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1—250 HP G.E. Mechanical drive variable speed turbine, 125# steam pressure. Direct connected to variable speed line shaft through Falk reduction gear. Will drive paper machine from 75 feet to 800 feet per minute.
1—Grand Drill steam driven Air Compressor 125".
1—Beloit Yankee dryer 106" face 12' diameter with bearings.
1—Jones pulper for motor drive.
1—Dryer 106" face 48" diameter (Suitable for Pope Reel).
1—Vickery felt conditioner for 101" trim.
1—Vickery felt conditioner for 116" trim.
15—6" & 8" Valley Iron Wks. plug cock stock valves.

Frank P. Lyden, Port Edwards, N. Y. A-4

FOR SALE

1—F. E. HATCH CO. 45" Slitters with 11 knives 1st 2 H.P. motor 2 rolls.
1—OSWEGO 57" Guillotine foot and hand action 5 H.P. motor.
1—De Luxe SLITTER SCORER 83" corrugate machine V strap motor attached—adjustable knives 4 rolls practically new.

BENNETT LIMITED, CHAMBLY CANTON, PROVINCE OF QUEBEC, CANADA

J-28

FOR SALE

3—Pusey & Jones Savealls. Cylinder molds 42" diameter x 146" face, iron end vats, anti friction bearings, 18" rubber covered couch rolls.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark, N. J.
Telephone Bigelow—3-3720

J-28

FOR SALE

Will Sacrifice

1—9" x 12" American Ball Horizontal Twin Slow Speed Automatic Steam Engine with two 3" Pickering Governors, Speed Regulating Changer, Automatic Lubrication. 150 Horse Power.
1—96" Murray Chipper, roller bearing, complete with 150 HP, 200 RPM, direct connected synchronous motor, automatic full voltage, starting panel and MG Set. Three sets knives.

All above equipment may be observed in operation and is in good operating condition. Address Box 49-353, care Paper Trade Journal. A-4

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1—64" trim twenty five ton six cylinder board machine with auxiliary equipment, now running.
1—38" trim one cylinder machine with eighteen dryers 28" x 42", six roll calender.
1—165" Fourdrinier with 25" dia. suction couch ran 800 F.P.M. also 2 sets of 160" Face Presses.
1—165" x 22" dia. suction Press Roll.

Address Box 49-329, care Paper Trade Journal. J-28

FOR SALE OR LEASE

Small paper mill with cylinder machine. Situated advantageously to sources of raw material and sales outlet. Ample room for converting plant in same building. Terms. Address Box 49-357, care Paper Trade Journal. TF

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon, Laboratory Coating and Treating Machines. New improvement. MAYER MACHINE COMPANY, Inc., 1313 Buffalo Road, Rochester 11, N. Y. TF

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1—102" Cameron Type 18—60" diameter rewind capacity.

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1—9' Carthage Disc Barker

BEATERS
1—800 lb. Beater—iron tub.

BEATERS (Laboratory)
2—Dilts Iron Tub Laboratory Beaters. Beater rolls 14" diameter x 10⅝" face, including motors.

BRASS FELT ROLLS
9—4" diameter x 140" face (with bearings).

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1—100" x 14".
3—114" x 14".
1—120" x 14"

CALENDER STACKS
1—72" 5 roll Calendar Stack.
1—76" 7 roll calender stack (heavy duty).

CHIPPERS
2—96" Murray 4 knife Chippers.

CYLINDER MOULDS
1—36" diameter x 80" face.
1—39" diameter x 72" face.
1—36" diameter x 79" face.

DECKER
1—Decker—48" diameter x 84" cylinder mold

DRIVES
2—#4 Reeves Drives.
1—#2 Reeves Drive.
1—Smith & Winchester mortise gear Drive.
1—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1)
2—Smith & Winchester Mortise Gear Drives with 26" diameter clutches—Ratio 8 to 1.
6—Enclosed drives. 75 h.p., ratio 8 to 1. Complete.

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1—General Machine Company 16 : 1.
1—Philadelphia 50:1 — 1 h.p. — 1200 r.p.m.
1—Philadelphia 21½:1 — 3 h.p. — 1200 r.p.m.

V-BELT DRIVE
[1—21¼" diameter x 7½" face, 5 groove.
{1—16½" diameter x 7½" face, 5 groove.
((With clutch).

DRYERS
14—48" diameter x 112 face.
30—36" diameter x 102" face.
50—42" diameter x 126" face.
9—36" diameter x 72½" face, with gears and bearings.
1—48" diameter x 91" face.
2—25" x 120" (Baby Dryers).
2—36" x 143".
1—24" x 130".

EMBOSSER
1—84" Hudson Sharp Toilet Embosser. Spare engraved roll.

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3—IMPCO Mud Filters.

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1—6 plate Shartle Flat Screen.
1—8 plate Packer Type Flat Screen.
2—12 Plate Murray Dunbar Flat Screens.
2—14 plate Sandy Hill. (Never used.)

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2—30" Waldron.
2—38" Waldron.

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1—Watson-Stillman Co. (Platen 24" x 24").

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2—Noble and Wood—Mammoth Type
1—Emerson Jordan—25 to 30 tons capacity—iron plug including new spare iron plug.

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1—Caustic Mixer.

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1—¾ h.p. ball bearing—splash proof gearhead motor—3/60/440. 1725 r.p.m.
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Various sizes.

PRINTING MACHINE
1—3 color 40" Rotary Cottrell Printing Machine, A-1 condition, provision for 2 more colors.

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Various cone and assorted pulleys.

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1—Jones Pulper. Complete with motor and drive.

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2—Weil Pump Co.—100 g.p.m.—100 P.S.I. including 15 h.p. motors (new equipment).
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Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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1—72" Beloit Reel.

ROLLS
500—Brass tube-steel tube—rubber covered iron rolls—various sizes.

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1—#2 Bird Rotary Screen.
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1—Pusey & Jones Saveall. Cylinder mold 42 x 146, anti friction bearings, including rubber covered couch roll.
1—#5 Bird Saveall.

SCREEN PLATES
20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock

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1—136" Moore & White Sheeter, duplex, with layboy.

SLITTERS AND WINDERS
1—208" Cameron—Type 20.
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1—42" Cameron—Type 40-4-B.
1—42" Cameron—Type 24-2A.
1—42" Cameron—Type 9-3.
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1—Rubber Squeeze Rolls, 20¾" diameter x 102" face.

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1—10 x 20 Shartle Duplex.
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Numerous other Centrifugal Stock Pumps Advise as to your requirements.

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5—Suction Boxes, 82" drilled face x 6" wide.

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1—24⅞" diameter x 160" drilled face.
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1—Downingtown Suction Press Roll 24" diameter x 110" face.

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1—29¾" diameter x 134" drilled face.

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1—54" 9 roll supercalender stack, completely rebuilt including motors, etc.

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40—Table Rolls 82" face x 3" diameter.

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1—Iron end Vat only, for decker or saveall, suitable for cylinder mold 36 x 130.

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1—8' diameter x 175" face

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Wanted Cylinder and Fourdrinier Machines (complete mills).

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WANTED
A 9 roll stack SUPERCALENDER. Approximately 60" wide. Must be in good running condition. Give full details and price. Address Box 49-358, care Paper Trade Journal TF

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1 GUILLOTINE — Approximately 51" to 54" equipped with automatic clamp and power operated back gauge.

Size	Minimum	Maximum
Width	44	50
Length	66	70
Platens	8	12
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Pressure	750	1,200

Type: Hydraulic press with self-contained circulatory oil system.
BENNETT LIMITED, CHAMBLY CANTON, PROVINCE OF QUEBEC, CANADA J-28

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TO TRIM APPROXIMATELY
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WANTED

WANTED—Household Towel converting machine; Interfolded Towel Machine; Facial Tissue Machine. Address Box 49-344 care Paper Trade Journal. J-28

WANTED—1 Kamyr Wet Machine with press and cutter. Must be in good condition. Please state condition, size, capacity and price. Address Box 49-355 care Paper Trade Journal. A-4

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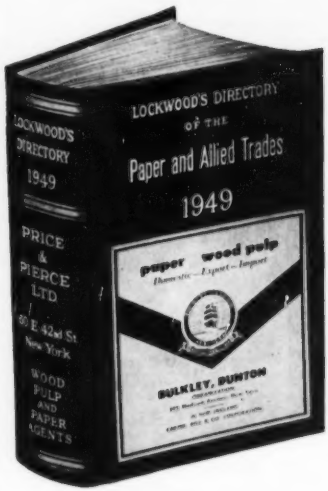

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1000	*Al.Ch.	ANY	240
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750	*Westg.	CW	900
750	*G.E.	MT-16	450
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600	*G.E.	IM	600
600	*G.E.	IM	900
500	*Ideal	AV	1800
500	*Tl.Ch.	ANY	514
400	*G.E.	MT-412	440
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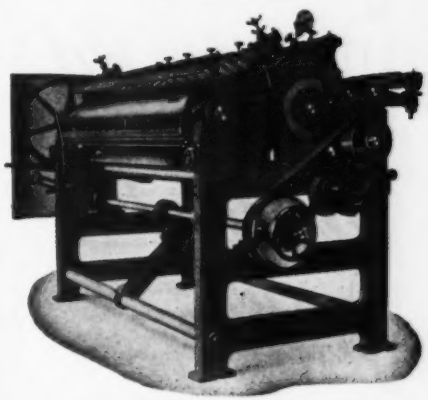

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BOND	COATED
WRITING	MACHINE COATED

KRAFT CONVERTING AND KRAFT ENVELOPE
KRAFT LINER BOARD

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

Price & Pierce ltd Pulp & Paper agents

60 E.42 ST. N.Y. 17.

WHERE TO BUY

Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY

Bird Machine Co.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS

American Manganese, Steel Div.
Chain Belt Company
Link Belt Company

CHEMICAL COTTON PULP

Hercules Powder Co.

CHEMICALS

Adell Chemical Co.
American Anode, Incorporated
American Cyanamid Co., Industrial Chem. Div.
Ansul Chemical Co.
Calco Chemical Co.
Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemical Corp.

CHESTS

E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.

CHUCKS

Efficiency Engrg. Co.

CLEANING MATERIALS

Amer. Cyanamid & Chem. Corp.
Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES

Appleton Machine Co.
Black-Clawson Company
Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works

COATING MACHINERY

Frank H. Davis Co.
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS

American Anode Div., The B. F. Goodrich Chem. Co.
E. I. Du Pont De Nemours & Co., Inc.,
The Goodyear Tire & Rubber Company
Monsanto Chemical Company
Nopco Chemical Co.

COGS

The N. P. Bowsher Co.

COMPOUNDED LATICES

American Anode Div., The B. F. Goodrich Chem. Co.

COMPRESSORS

Allis-Chalmers Mfg. Co.
Nash Engineering Co.

CONSISTENCY REGULATORS

Askania Regulator Company
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSULTING ENGINEERS

Birk, F. Paul
Ebasco Services
Frank W. Egan & Co.
Ferguson, Hardy S.
C. M. Guest & Sons
Hardy, George F.
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
Roderick O'Donoghue
The Rust Engrg. Co.
J. E. Sirrine & Co.
John Waldron Corp.
H. G. Weber & Co., Inc.
Frederick Wierk

CONTROLLERS

Askania Regulator Company
Black-Clawson Co.
The Bristol Co.
The Brown Instrument Co.
Cochrane Corp.

CONTROLS

Askania Regulator Company
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Johnson Corp.
Midwest-Fulton Machine Co.
Stickle Steam Specialties Co.

CONVEYORS

American Well Works
Black-Clawson Company
Chain Belt Company
Frederick Iron & Steel, Inc.
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O
Shartle Brothers Mch. Co.

CORE CUTTERS

Suburban Machine Co.

CORES

Elixman Paper Co.
Hubbard Spool Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

COUPLINGS

Black-Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

CRANES

Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

CUP AND CONTAINER MACHINES

Mercury Engrg. Corp.

CUTTERS

Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor, Stiles & Co.

CYLINDERS
Askania Regulator Company
M. W. Jenkins Sons, Inc.
National Tube Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING
Williams-Gray Co.

DE-INKING
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
Shartle Brothers Machine Co

DEINKING CHEMICALS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Midwest-Fulton Machine Co.
Monsanto Chemical Company
Philadelphia Quartz Co.

DENSOMETERS
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

DEWAXING CHEMICALS
General Dyestuff Corp.
Nopco Chemical Co.

DIGESTERS
Babcock & Wilcox Co.
The Bigge Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
Lukenweld
Pusey & Jones Corp.

DIRTEC
Bird Machine Co.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Black-Clawson Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DRIERS
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Ins.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
The Youngstown Welding & Engrg. Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Chain Belt Company
Davis, Frank H., Co.
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Syco Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRYER DRAINAGE
Midwest-Fulton Machine Co.
Stickle Steam Specialties Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp
C. K. Williams & Co.
Witco Chemical Co.

EMBOSSING ROLLS
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Midvale Company
Northern Engraving & Mch. Co
B. F. Perkins & Son, Inc.
John Waldron Corp.

EMULSIFIERS
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.

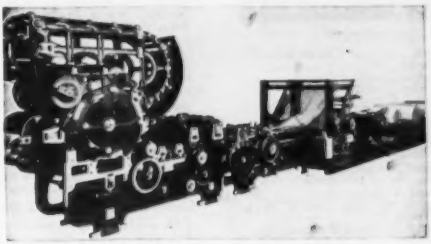
EVAPORATORS
Davis Engrg. Corp.
Foster Wheeler Corp.
Goslin-Birmingham Mfg. Co. Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hardinge Company, Ins.
Merrick Scale Mfg. Co.
Leeds & Northrup

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.



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CANADIAN
INDUSTRIES, LIMITED

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FELT CLEANERS
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.

FELT GUIDES
Black-Clawson Co.
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
W. H. Loomis Talc Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Bird Machine Company
Cochrane Corp.
Hardinge Company, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Walworth Company

FITTINGS
Crane Company
The Kuhns Bros. Co.
Phoenix Products Co.
Walworth Company

FLEXIBLE COUPLINGS
Ajax Flexible Coupling Co.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.

FORMING MACHINES
Black-Clawson Co.
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
American Manganese, Steel Div.
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John
Westinghouse Electric Corp.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES, WEB
Askania Regulator Company
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.

GUMMING MACHINES
Dilts Machine Works.

GUMS
National Starch Products Inc.
Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

HEAT EXCHANGERS AND RECOVERY SYSTEMS
William Allen Son's Company
Davis Engrg. Corp.
Foster Wheeler Corp.
Midwest-Fulton Machine Co.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
Cochrane Corp.
Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
Minneapolis-Honeywell Regulator Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.
The Goodyear Tire & Rubber Company

IMPREGNANTS
American Anode Div., The B F. Goodrich Chem. Co.

INDENTING MACHINES
Dilts Machine Works.

INDUSTRIAL TRACTORS
Clark Equipt. Co., Clark Tractor Div.
Towmotor Corp.

INK GRAVURE
Gotham Ink & Color Co.

INSTRUMENTS, TESTING AND MEASURING
Askania Regulator Company
Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
The Brown Instrument Co.
E. J. Cady Company
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Williams Apparatus Co., Inc.

JOINTS
Johnson Corp.
Perfecting Service Corp.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOT BORING MACHINES
DeZurik Shower Company

LABORATORIES
Timber Engrg. Co.

LABORATORY EQUIPMENT
William Allen Son's Company
Appleton Machine Co.
Bauer Brothers Co.
The Bigga Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.

LAMINATING MACHINES
Dilts Machine Works.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.
Suburban Machine Co.

LUBRICANTS
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler System).

MATERIALS HANDLING
Cleveland Crane & Engrg. Co.
Frank G. Hough Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
E. J. Cady Co.
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

MOISTURE CONTENT CONTROL
Askania Regulator Company
Midwest-Fulton Machine Co.
Stickle Steam Specialties Co

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Chicago Electric Company
Fairbanks, Morse & Co.
General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Link Belt Company

PACKING BOXES
Johnson Corporation
The Moore & White Co.
Perfecting Service Corp.
Shartle Brothers Machine Co.

PAINT
American Marietta Co., Valdura Division

PAPER MACHINES
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Suburban Machine Co.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PENSTOCKS
The Bigga Boiler Works Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.

PIPE
American Cast Iron Pipe Co.
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Michigan Pipe Co.
Michigan Steel Casting Co.
National Tube Co.
Walworth Company
Youngstown Welding & Engrg. Co.

PIPE FITTINGS
American Cast Iron Pipe Co.
The American Rolling Mill Co.
Crane Company
Ladish Company
Michigan Steel Casting Co.
Phoenix Products Co.
Walworth Co.

PIPE MARKERS
W. H. Brady Co.

PITCH CONTROL
General Dyestuff Corp.
Monsanto Chemical Company
Rohm & Haas Co.

PLATERS
Gibbs-Brower Company, Inc
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
The Bigga Boiler Works Co.
J. O. Ross Engrg. Corp.
Lukenweld
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black-Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co

PRECISION SAMPLE CUTTER
Testing Machines, Inc.

PRESERVATIVES
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

PRESSURE VESSELS, STEEL AND ALLOY
William Allen Son's Company
Babcock & Wilcox Co.
The Bigga Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
The Midvale Company

PRESSES
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc
Williams Apparatus Co.

PULP CLASSIFIER
The Bauer Bros. Co.

PULP STOCK VALVES
Crane Company
Record Fdy. & Mach. Co.
Shartle Bros. Mach. Co.

PULPERS
American Paper Mchy. & Engrg. Works, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest-Fulton Machine Co.
Shartle Brothers Machine Co

PULPS
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gotteaman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.

Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.

PULPSTONES

Norton Company

PUMPS

Allis-Chalmers Mfg. Co.
American Manganese, Steel Div.
Black-Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Frederick Iron & Steel, Inc.
Gibbs-Brower Company, Inc.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Paper Converting Mch. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company

RADIANT BURNERS

Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES

Adell Chemical Co.
William Allen Son's Company
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS

Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECAUSTICIZING PLANTS

The Dorr Company

RECOVERY SYSTEMS

William Allen Son's Company
Babcock & Wilcox Co.
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS

The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works (Kohler System)
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg Co.

REFINERS

Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Midwest-Fulton Machine Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS

Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
DeZurik Shower Company
The Foxboro Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
Midwest-Fulton Machine Co.
Minneapolis-Honeywell Regulator Co.
National Technical Laboratories
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

RESEARCH CHEMISTS

Timber Engrg. Co.

RESINS

American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Rohm & Haas Co., Resinous Products Div.

ROLLS

American Cast Iron Pipe Co.
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Edward J. McBride
The Midvale Company
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Philbrick Engrg. Corp.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John
The Youngstown Welding & Engrg. Co.

ROLL COVERS

The Cincinnati Rubber Mfg. Co.
The Goodyear Tire & Rubber Company
Edward J. McBride
Stowe-Woodward, Inc.

ROLL HANDLING EQUIPMENT

Dilts Machine Works (Kohler System).

ROLL STANDS

Cameron Machine Co.
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS

The Moore & White Co.

ROTARY BOILERS

The Biggs Boiler Works Co.

ROTARY STEAM JOINTS

Johnson Corp.
The Moore & White Co.
Perfecting Service Corp.

RUBBER PRODUCTS

The Goodyear Tire & Rubber Company

SATURANTS

American Anode Div., The B. F. Goodrich Chem. Co.

SATURATING MACHINES

Black-Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS

Bird Machine Company
Hardinge Company

SCALES

Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

SCREEN PLATES

Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS

Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES

Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Suburban Machine Co.
Valley Iron Works Co.

SHOWER PIPES

Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS

Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

SIZING

American Cyanamid Company, Industrial Chemicals Division
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Philadelphia Quartz Co.
Stein-Hall Co., Inc.

SIZING TESTER

W. & L. E. Gurley

SLIME CONTROL

W. A. Cleary Corp.
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
National Aluminate Corp.
Rohm & Haas Co.

SLITTERS

Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Machinery & Prod. Engrg. Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS

William Allen Son's Company
The Biggs Boiler Works Co.

SPECIAL MACHINERY

Dilts Machine Works.

SPLICING TISSUE

Williams-Gray Co.

SOFTNESS-STIFFNESS TESTER

W. & L. E. Gurley
Testing Machines, Inc.

SOLUBLE OILS

Adell Chemical Company
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

SOLVENTS

Adell Chemical Company

STAINLESS STEEL

American Cast Iron Pipe Co.
Armco Steel Corp.
Michigan Steel Casting Co.
The Midvale Company
U. S. Steel Corp.

STARCH

American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Clinton Industries, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

STEAM JOINTS

The Moore & White Co.

STEAM SPECIALTIES

Babcock & Wilcox Co.
Cochrane Corp.
Combustion Engrg. Co., Inc.
Davis Engrg. Corp.
Johnson Corp.
Midwest-Fulton Machine Co.
Perfecting Service Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

STEEL

Allegheny Ludlum Steel Corp.
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
Midvale Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD

Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS

William Allen Son's Company
The Biggs Boiler Works Co.

STRAPPINGS & STRAPPING MACHINES

The Stanley Works

STUFF CHESTS

Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Midwest-Fulton Machine Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES

Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SUCTION UNIT

Paper & Industrial Appliances, Inc.

SULPHUR

American Cyanamid Company, Industrial Chemicals Division
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS

Valley Iron Works Co.

SULPHUR DIOXIDE

American Cyanamid Co., Calco Chemical Div.
Anaul Chemical Company
Virginia Smelting Co.

SUPERCALENDERS

The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES

American Anode Div., The B. F. Goodrich Chem. Co.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

TACHOMETERS

The Brown Instrument Co.

TAKE-OFF UNITS

Dilts Machine Works (Kohler System).

TALC

American Cyanamid Company, Industrial Chemicals Division
W. H. Loomis Talc Corp.

TANKS

William Allen Son's Company
The Biggs Boiler Works Co.
Cochrane Corp.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
B. F. Perkins & Son, Inc.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Waldron Corp., John

WHERE TO BUY

TEARING TESTERS
Testing Machines, Inc.

TENSILE TESTERS
B. F. Perkins & Son, Inc.
Testing Machines, Inc.

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Oliver United Filters, Inc.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

TIMBER ROOF TRUSS DESIGNS
Timber Engrg. Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
The Stanley Works
Walworth Company

TRACTOR SHOVELS
Frank G. Hough Co.

TRACTORS & TRUCKS
Frank G. Hough Co.
Towmotor Corp.
Clark Equipt. Co., Clark Tractor Div.

TRANSMISSIONS
Link Belt Company

TRAPS
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

TUBES
Babcock & Wilcox Co.
National Tube Co.

TUBING MACHINES
Dilts Machine Works.

TUBING, MECHANICAL
National Tube Co.

TUBS
Rodney Hunt Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

TURPENTINE RECOVERY
Foster Wheeler Corp.

UNWINDERS
Dilts Machine Works (Kohler System).

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.
Suburban Machine Co.

VALVES
Askania Regulator Co.
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Crane Company
Dilts Machine Works
The Foxboro Company
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Oliver United Filters
The Sandy Hill Iron & Brass Wks.
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WASTE TREATING EQUIPMENT
Alhydro, Inc.
The Dorr Company

WATER CONDITIONING
Alhydro, Inc.
Calgon, Inc.
Cochrane Corp.
General Dyestuff Corp.
National Aluminate Corp.

WATER DISPERSIONS
Alhydro, Inc.
American Anode, Inc.
Rohm & Haas Co., Resinous Products Div.

WATER FINISH EQUIPMENT
Dilts Machine Works.

WAXES
Hercules Powder Co.

WAXING MACHINERY
Black-Clawson Co.
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WEB TENSION CONTROL
Dilts Machine Works (Kohler System).

WELDING EQUIPMENT
General Electric Company
Walworth Company

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WETTING AGENTS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

WHITE WATER HEATERS, AUTOMATIC SELF CLEANING TYPE
Davis Engineering Corp.

WINDERS AND REWINDERS
The Appleton Machine Co.
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works (Kohler System)
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Waldron Corp., John

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler System).

WIRE BRUSHES
M. W. Jenkins Sons Inc.

WIRES
Appleton Wire Works
Bulkley, Dunton Pulp Co., Inc.
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

WIRE BRUSHES
Williams-Gray Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.

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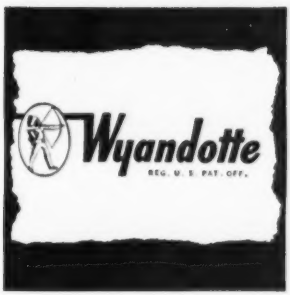

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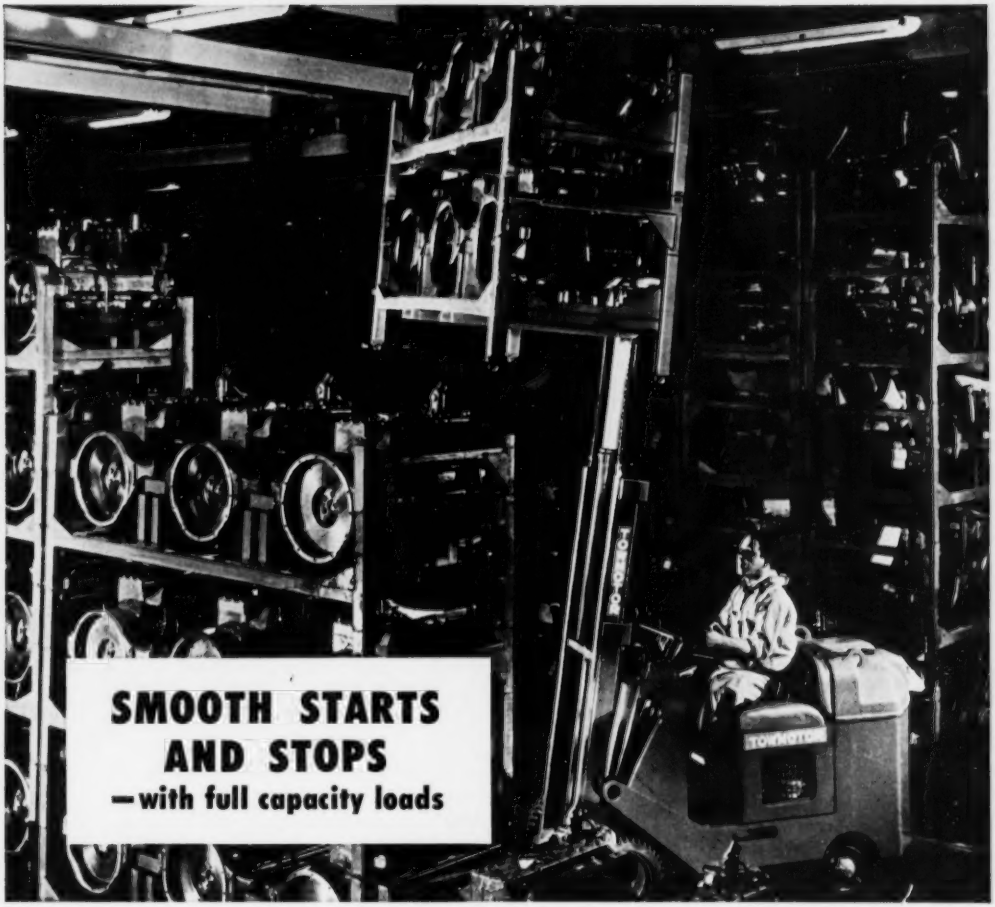

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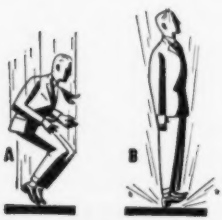

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